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J. SOLIS-COHEN, M.D. FREDERICK I. KNIGHT, M.D.

PHILADELPHIA

BOSTON

GEORGE M. LEFFERTS, M.D.

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AND

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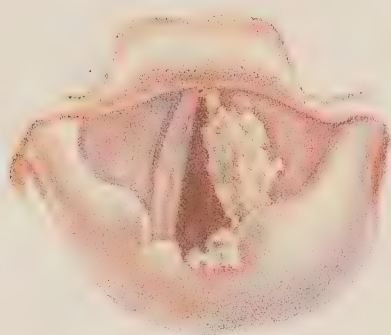


Fig. 1.

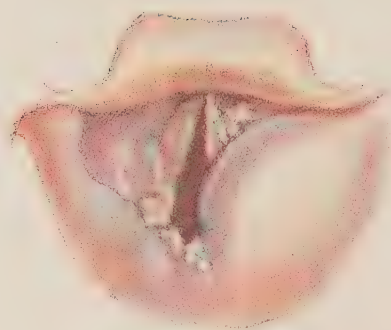
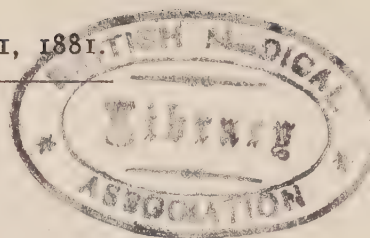


Fig. 2.



Fig. 3.



# ARCHIVES OF LARYNGOLOGY.

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## CASES OF TUBERCULOSIS IMPLICATING THE MOUTH AND THROAT.

REPORTED WITH OBSERVATIONS

By LENNOX BROWNE, F. R. C. S. E.,

AND

DUNDAS GRANT, M. A., M. D.,

LONDON.

THANKS to the recent researches of our fellow-workers, more especially those of Isambert, Wendt and Heinze, so much advance has been made in the pathological study of tuberculosis as affecting the pharynx and larynx, that it may now be considered an accepted fact among laryngoscopists that tubercle, as such, does exist, and does pass through all its pathological phases in these regions—a point on which, we venture to think, the writings of Louis, Rokitansky and Virchow should have sooner obtained a general *consensus* of opinion.

There does not, however, appear to be the same amount of unanimity on certain points of clinical interest in connection with the subject; as, for example, whether the throat can be affected primarily, and whether tuberculous ulceration assumes such a type that it can with certainty be diagnosed by means of the laryngoscope during life, and independent of other commemorative signs and symptoms, in the firm assurance of confirmation on autopsy. Other important practical points of diagnosis, prognosis and treatment merit still further consideration at the hands of the practising physician.

In the belief that all such questions can only be decided by the faithful report of cases carefully investigated, we feel it a duty to contribute the following notes of cases by no means specially selected, and to append thereto the opinions which these and oft-repeated similar observations have led us to adopt.

In these reports we have thought it advisable, for the sake of brevity and conciseness, to avoid, as far as possible, dwelling on the detailed description of organs other than those indicated in the title, as well as on those symptoms which bear only on the question of the general disease, thereby devoting the whole of the space at command to the local affections under consideration.

CASE I.—*Winter cough with hoarseness, three and a half years; recovery of voice and relapse, two and a half years; dysphagia, same period; death; autopsy.*

Thomas B., æt. 36, a basket-maker, admitted to hospital September 16, 1878.

*History.*—Good health till occurrence of cough, with partial loss of voice, in the late winter of 1874. There had been temporary improvement, with recovery of voice, in the warm weather, followed by return of cough and complete aphonia in the following winter. A little later he experienced pain in deglutition. His circumstances had always been poor, and he was addicted to drink. One of his brothers had died of "bronchitis in the throat."

His local symptoms on admission were as follows : \*

(a.) Voice extremely hoarse, almost aphonic.

(b.) Respiration 20 per minute, generally embarrassed, and to such an extent on exertion as to force him to desist.

(c.) Cough loose and hoarse in quality, with a copious expectoration of nummular purulent matter.

(d.) Deglutition accompanied by severe pain running up to the ears. This pain was more marked in the case of liquid than solid food, the attempt to take liquids being apparently followed by a leakage into the larynx, which set up a paroxysm of coughing.

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\* The symptoms in these cases are always described in the consecutive order of voice, respiration, cough and deglutition, as recommended by us in the forms for taking throat cases, published by Bailliere & Co., 20 King William Street, Strand.

Local examination detected the following objective signs :

(a.) Tongue pale, flabby and indented ; walls of mouth, velum and fauces pale and traversed by numerous minute veins ; tonsils slightly tumid ; above the uvula were many small, clear, elevated points ; pharynx pale and granular.

(b.) Larynx.—Epiglottis (Plate i, Fig. 1) apparently normal ; around both arytenoids there was considerable swelling, but more marked on the left side ; the surface of the interarytenoid fold, the left ventricular band and the left vocal cord was covered by an irregularly connected granular ulceration. The active adductive power of the left cord was greatly impeded by the mechanical obstruction of the swollen arytenoid (Plate i, Fig. 2).

Both lungs were diseased, and his general condition one of well-marked phthisis.

*General Treatment.*—Hypophosphites of soda and lime and phosphorized cod liver oil, with appropriate diet. *Locally* he was ordered to inhale the compound tincture of benzoin (a teaspoonful in a pint of water at 130° to 150° Fahr.), and to have a solution of chloride of zinc (gr. xxx to the ounce) applied daily to the larynx. Scarification was practised on one occasion, Oct. 23, when the tumefaction over the left arytenoid was so great as nearly to fill the supraglottic larynx, but very little diminution in the size of the swelling took place, and ulceration occurred at the site of the punctures.

When death took place, the autopsy revealed very advanced disease in the lungs, and the following laryngeal changes (Plate i, Fig. 3): The mucous membrane generally was exceedingly pale. Epiglottis, normal in size and form, but presenting on its laryngeal surface several small follicular elevations. There was much irregular thickening of the ary-epiglottic folds, and the mucous membrane over them was loose and baggy. Over both cornicula and arytenoids the mucous membrane presented a tuberculated appearance, the elevations being of a grayish color and of about the size of pins' heads. The right ventricular band contained in its posterior two-thirds a dense material of almost cartilaginous consistency, extending from above the vocal process forward. The left ventricular band was almost completely removed and covered by a weak-looking ulcer with irregular elevated margins, and a rough but slightly elevated granular floor, the anterior half of the base of the ulcer being densely indurated. There was great thickening of both vocal cords, notably of the middle third of the left one.

On the inner aspect of the right arytenoid cartilage there was a carious excavation, and the vocal process was ossified, bare and rough. The joint presented a slight degree of eburnation. The upper portion of the left arytenoid cartilage down to the level of the vocal process was converted into a rough calcareous nodule about the size of a small pea. It lay loosely in the surrounding soft tissues, and rested on the lower part of the cartilage which was rough, gritty, of a brown color, and only held in position by the vocal cords, the joint being completely disorganized and the articular surfaces quite carious.

Examining the cricoid cartilage, there was found on the right side of its summit, internal to the crico-arytenoid joint, a portion so hardened as to resemble more than anything the structure of dentine, with a cavity in it of the size of a millet-seed, and very suggestive of that of a carious tooth.

The cartilages were all in a prematurely advanced state of ossification.

A vertical section through the left cord and the ulcer on the left ventricular band showed that all the structures were infiltrated by a quantity of small round cells, the grouping of which bore unmistakable resemblance to recognized types of tubercular material, albeit that giant cells, forming the centres of the groups of leucocytes, could not be distinctly made out.

CASE 2.—*Pulmonary phthisis two years, with later laryngeal manifestations ; death ; autopsy.*

Robert H., æt. 29, engineer. Admitted 20th April, 1880. Ascribed his illness to an attack of inflammation of the lungs two years before that date. Along with the usual symptoms of progressive phthisis (including cough, emaciation, night-sweats, hæmoptysis, etc.) he had a gradually increasing hoarseness and feebleness of voice, and three weeks before admission experienced pain and difficulty in swallowing.

There was a distinct hereditary tendency to phthisis, and during the whole of the winter of 1879–80 his occupation exposed him to great alternations of temperature.

On admission he was suffering from pulmonary phthisis in the second stage.

The following were the local symptoms of present import :

(a.) Voice feeble and almost aphonic.

(b.) Respiration embarrassed.

(c.) Cough frequent, loose, worse during eating and drinking or lying down, aphonic in quality, and accompanied by the expectoration of a muco-purulent material.

(d.) Deglutition accomplished only with great pain, especially in the case of fluids which tended to enter the windpipe and to regurgitate.

On local examination :

(a.) The tongue was seen to be pale, flabby, and indented, the velum palati and faucial pillars pale, with patches of dilated capillaries, the uvula rather long, the pharynx pale and granular with a few venous streaks.

(b.) In the larynx the epiglottis was exceedingly swollen and of a dull grayish red, the arytenoid eminences were so enlarged as with the epiglottis to conceal the interior of the larynx, and all the parts were bathed in a copious muco-purulent secretion.

*Treatment.*—An opiate linctus was to be slowly sipped when the cough was troublesome and his diet to consist chiefly of raw eggs. A daily application was made to the larynx consisting of a solution of chloride of zinc, morphia and glycerine, and a vapor of benzoin and chloroform was to be occasionally inhaled.

Before death the epiglottis was observed to be the seat of rapid eroding ulceration. The larynx only was examined *post mortem*, and showed the following state of matters. Of the epiglottis only the lowest fifth remained as a mere stump with a very irregular eroded margin. The tissues over the arytenoid cartilages were much increased in bulk. The vocal processes were eroded and bare, each lying in the centre of an ulcer.

A pale shallow ulcer with well defined margin extended over the whole of the inner wall of the larynx, from the edges of the ary-epiglottic folds down to the mucous membrane of the trachea. The floor of this ulcer had a peculiar worm-eaten appearance and was thickly beset with small elevations like grains of semolina. These when picked away consisted of a yellow, crumbly, and gritty tuberculous-looking matter, leaving behind small apertures, apparently the mouths of gland-ducts, since the material under the microscope was seen to consist of epithelial and pus cells in all stages of fatty degeneration. The ventricular bands were much thickened, almost occluding the ventricles. The vocal cords were in a similar condition; the cartilages were mobile and apparently healthy.

Microscopical examination of a section through the anterior part of the ulcer on the left side of the larynx revealed the presence of tubercular infiltration, as evidenced by the existence of a fine cell-material, arranged in masses in which giant-cells could be recognized.

CASE 3.—*Laryngeal manifestations of tuberculosis upward of two years prior to evidence of pulmonary disease.*

Ernest C., a native of Bordeaux, æt. 35, auctioneer's clerk, admitted under the care of Mr. Steil, August 9, 1878.

Three months before admission he suffered from a cold, followed by continued cough, with muco-sanguinolent expectoration, sore throat, pain on swallowing, profuse night-sweats and rapidly increasing debility.

No history of hereditary or acquired constitutional disease could be elicited, but his occupation enforced the frequent exercise of his voice in situations exposed to draughts and the rigors of our severe winter climate.

On admission his general condition was one of great debility, as above described, and he had the following local symptoms :

- (a.) Voice hoarse and feeble.
- (b.) Respiration embarrassed on exertion.
- (c.) Cough hoarse and paroxysmal, with expectoration of a quantity of mucus ; worse before meals.
- (d.) Deglutition accompanied by pain running up to the ears. This pain was variously occasioned by articles of whatever temperature, but invariably by alcoholic or acrid fluids.

The laryngoscope showed the epiglottis to be congested and ulcerated, and the tissues over the arytenoid cartilages to be of a vivid red color, and much swollen.

The lungs were declared, after repeated examinations, to be free from disease, and this opinion was afterward confirmed by several French physicians. The diagnosis given was of a laryngeal phthisis, with, at the time, an exacerbation of laryngitis.

Under treatment the inflammation was reduced, and he improved in a month sufficiently to go to France for a time, but on resuming his occupation in London his symptoms returned, and in September, 1879, he again applied at the hospital, and came under the care of Mr. Lennox Browne.

His voice was hoarse and whispering, his cough was very fre-

quent, and he expectorated a great amount of thin, watery fluid, with a quantity of purulent matter. Deglutition was more painful than before, the left side being the seat of more acute suffering than the right.

On local examination there was seen to be thickening and ulceration of the epiglottis, also of the vocal cords, and of the tissues covering the arytenoid cartilages, more especially on the right side.

The lungs were now distinctly diseased.

In addition to the ordinary treatment, he had a daily insufflation of morphia and starch powder, as recommended by many authors, for the odynphagia, but it was abandoned after a number of trials, as his deglutition underwent no improvement. For this was substituted the topical application of a solution of chloride of zinc with morphia and glycerine, which gave him considerable relief. He suffered greatly from the constant flow of enormous quantities of watery fluid from his mouth and throat, and in view of this (as well as of the increase which had taken place in his night-sweats) he had each night a pill containing  $\frac{1}{45}$  of a grain of sulphate of atropia.

Under this treatment the profuse laryngorrhœa abated very considerably, and he was able to swallow a few oysters, etc. All the same, his emaciation increased; the right apex was rapidly breaking down; his temperature was 100° F. in the forenoon, and his urine contained a distinct trace of albumen.

At the end of November he managed to start for Bordeaux, where, as far as medical prescience can guide us, he must soon have succumbed to his malady.

*CASE 4.—Tuberculous ulceration of the tongue two years and a half prior to laryngeal or pulmonary manifestations; death; autopsy.*

James C., æt. 48, admitted January 2, 1879, had had, three years before admission, attacks of pain running from the tongue to the ear, apart from and during deglutition. Since then, during the winter, has suffered from ulceration of the tongue, with pain and stiffness in the neck, disappearing each summer. Within the last six months had been troubled with sore throat, cough and wasting.

He was always exposed to the inclemency of the weather, and had no family tendency to phthisis; while as to syphilis, he not

only denied having ever suffered from it, but as he had married at 18, was the father of five healthy children, and had borne so good a character as to have been in the same employ all his life, there was every reason to believe his statement.

In general condition he was emaciated and aged-looking.

His local symptoms were :

(a.) Hoarseness and nasal character of the voice.

(b.) Embarrassment of respiration during the night and after exertion.

(c.) A hacking cough, worse after exercise, and accompanied by the expectoration of a quantity of frothy mucus.

(d.) Pain during deglutition at the stage corresponding to the passage of food into the pharynx. Hot drinks, pepper or acids gave great pain to the larynx.

On local examination the objective signs were (Plate ii) :

(a.) Tongue (Fig. 2) pale, flabby, indented, and on it two pale, shallow ulcers, with small, grain-like elevations on their floors, and having slightly raised, irregular margins. Of these ulcers, one was situated on the under surface of the left side near the lip, the other on the right side, about midway in its length.

(b.) The laryngoscope (Fig. 1) revealed congestion of the epiglottis, with ulceration on its laryngeal surface, especially toward the right side. Over the right arytenoid cartilage the tissues were so swollen as to form a large pyriform tumor occluding the greater portion of the right vocal cord. The left presented the same condition in a minor degree. The right ventricular band was much swollen. The whole larynx was bathed in a mucous fluid.

The lungs presented the following signs : Crepitation on deep inspiration at the right apex ; dulness on percussion ; crepitation and double friction sound with respiration at the left apex.

*Treatment.*—Vapor of creosote night and morning. In the belief that the lingual ulceration might possibly be syphilitic, an opinion expressed somewhat strongly by more than one of our colleagues, iodide of potassium (gr. viii) with syrup of iodide of iron (m.xxx) was given twice a day, with cod liver oil (℥ ss) night and morning.

On one occasion the galvano-cautery was applied to the ulcers, but the pain was rather increased by it, and there was no attempt at healing.

He died in March, and on *post-mortem* inspection the advanced

tubercular disease in the lungs and the presence of scrofulous abscesses in the epididymes, etc., testified to the nature of his constitutional disease.

The ulcers on the tongue (Fig. 3) were changed, in so far as their edges had become pale and sodden-looking, and their floors presented a "raw-meat" appearance, the muscular fibres being laid bare, and all trace of the grain-like elevations having disappeared.

In the larynx (Figs. 4 and 5) the mucous membrane generally was pale. The epiglottis was much thickened, and on its free border, from a short distance to the left of the middle line down to the right ary-epiglottic fold, was an excavated ulcer with rough irregular edges and a pale granular base. This ulcer extended over the greater portion of the right half of the laryngeal surface of the epiglottis, and down to the right ventricular band. There were also two other smaller ulcers of less depth and somewhat oval in shape on the left half and middle of the epiglottis respectively. The right ary-epiglottic fold was swollen out into a flabby, wrinkled, somewhat globular tumor. The left formed a less prominent swelling. Of the ventricular bands, the right was represented by a firm longitudinal swelling, concealing the ventricle. It was irregular in outline, of a soft semi-cartilaginous consistency, and quite movable on the subjacent cartilages. The left was normal. The right vocal cord bore on its posterior part, corresponding to the inner surface of the arytenoid cartilage, an ulcer, extending into the adjacent part of the ventricle, and containing in its floor a portion of the arytenoid cartilage which had become bare and rough. The left vocal cord was comparatively healthy. The microscopical appearance in this case was that of the tubercular infiltration of all the tissues involved.

CASE 5.—*Tuberculous disease of the gums and fauces nearly three years prior to laryngeal or pulmonary evidences; death.*

G. A. C., æt. 31, merchant, admitted April 19, 1880.

In good health up till four years prior to admission, when the gum of the right half of the upper jaw became of a bright red color, much swollen and soft, and receded so much as to loosen the teeth, while at the same time it was intensely painful. Teeth were removed and the disease made temporary regressions, but ul-

timately it spread steadily, breaking out in the lower jaw. He had no chest attacks until sixteen months before admission, when he suffered from pleurisy, from which he entirely recovered after a sojourn of three months at Malta, losing all pain and gaining a stone in weight. On his return to England the disease in his gums again reappeared. He was ordered to the south of France, where he at once was attacked with pneumonia, due, as he thought, to the piercing winds of that region. Later, he suffered from hæmoptysis and other undoubted symptoms of pulmonary tuberculosis. Latterly he had suffered from dysphagia in an intense degree. Although among other treatment he had been freely dosed with iodide of potassium and mercury, the patient denied ever having had syphilis, nor had these specific remedies had any beneficial effect.

On February 27, 1880, he was seen by Mr. Lennox Browne, who found him affected with tubercular ulceration of the gums, fauces and pharynx, with laryngeal phthisis at the commencement of the stage of ulceration, and of pulmonary disease early in the second stage.

There was no evidence of family predisposition to phthisis beyond the death of one brother of lung disease.

On admission he was emaciated and worn, and weighed 9 st., 3 lbs (normal weight, 10 st. 11 lbs.).

His voice was almost suppressed; he suffered from a severe continuous cough, aphonic in character, accompanied by the expectoration of a quantity of thick saliva and mucus during the day, and of a thicker greenish matter during the night. Deglutition was painful in the case of hard solids or thin fluids, but he could swallow soft pulpy food with little trouble. He stated that in this respect he was much better than when first seen by Mr. Lennox Browne, an effect resulting apparently from the frequent employment of an application consisting of the compound tincture of benzoin, with the compound tincture of camphor, tincture of belladonna, and yolk of egg.

On local inspection his tongue was seen to be very red with prominent papillæ; there was a small ulcer under the tip. The buccal mucous membrane was very anæmic. On the inner surface of the right upper alveolar process, corresponding to the last molar tooth, there was a very pale shallow ulcer, with a fine granular surface and slightly raised edges which were pale, but in a few parts congested. A similar form of ulceration affected a

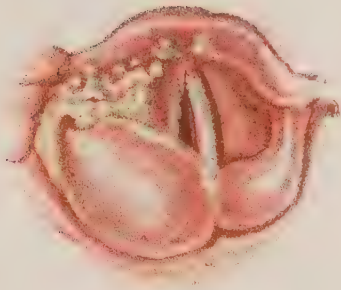


Fig. 1

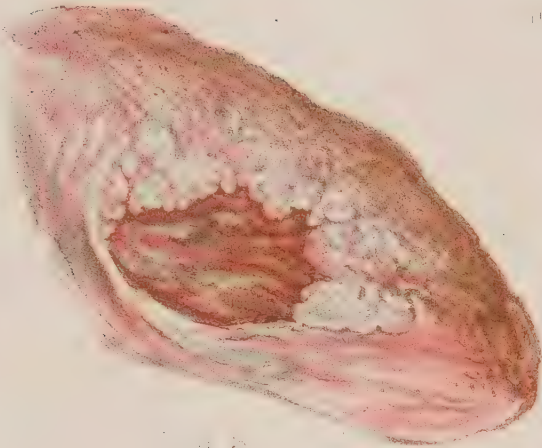


Fig. 2

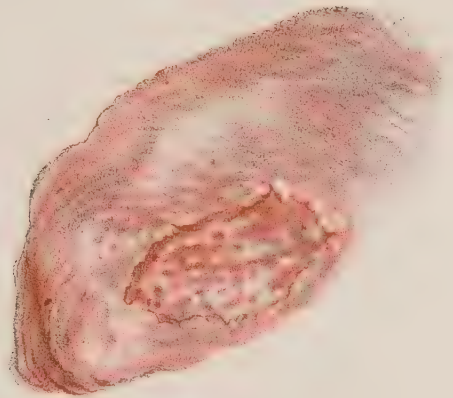


Fig. 3



Fig. 4



Fig. 5

*Leunig, Bismuth ad nat. del.*



considerable portion of the mucous membrane covering the posterior part of the lower jaw and fauces of the left side. These ulcerations were very like those seen and described on the tongue of James C. in Case 4, and shown in Fig. 2, Plate ii, and almost identical with those in the larynx of Case 1, as seen in Fig. 3, Plate i. The velum palati was covered with granular spots comparable to grains of semolina under the mucous membrane. The left tonsil presented a few follicles blocked with caseated secretion.

In the larynx the epiglottis was comparatively normal, but the arytenoids were swollen. There was ulceration in the interarytenoid space; the vocal cords were thickened and irregular at their edges; there was left a considerable space between them during attempted phonation. The mucous membrane was pale, and there was an enormous secretion of slightly purulent mucus.

Both submaxillary glands, and one of the left posterior cervical glands were much enlarged. The larynx was tender when compressed.

There was advanced disease in the right lung, and incipient disease in the left.

The following local treatment was adopted: a solution of chloride of zinc and morphia was daily applied to the ulcers; an ounce each of compound tincture of benzoin and paregoric, with a drachm of tincture of belladonna, was mixed with the yolks of two eggs, and water was added to make up six ounces. This was given him as an application for constant use, and especially before food-taking. The camphor-chloral solution was applied externally to mitigate the pain. As internal remedy he took a mixture of the hypophosphites of lime and iron.

The galvano-cautery was applied to an ulcer on the gum, between the right upper molars and the cheek. After this the patient went to the country. He wrote to say that the spot which had been cauterized had healed up and was quite hard; that he had had an attack of pleurisy, and that he had still great pain in swallowing.

He died on June 27th, and owing to his absence from London no autopsy could be made.

*Remarks.*—These cases illustrate most of the salient points in the history and treatment of the disease in question. It remains for us to make a series of clinical remarks on the points suggested by them.

In the first place, we would draw attention to the fact that the cases have not been described under the heading of laryngeal or pharyngeal phthisis, because it does not appear to us desirable, in the present state of our knowledge, to enforce the theory that there can be tuberculous disease in either of these regions, independent of a similar lesion in the lungs. At the same time, it cannot be stated for certain, that such manifestations arising in any part are necessarily secondary to the occurrence of disease in the chest. Nor can either of these questions be definitely settled until an opportunity occurs of dissecting subjects of tuberculosis in the throat in whom there are no evidences of disease in the chest. Such an opportunity, we believe, has not yet been obtained.

The clinical evidence, at present in our possession, in favor of a possible primary occurrence of tubercle in the throat, is of a twofold character, commemorative and objective.

Of the former kind is the not unfrequent account given by patients of the occurrence of loss of voice, laryngeal pain and difficulty of deglutition prior to the appearance of any symptom of pulmonary disease. The objective evidence is well illustrated in several of the above cases, but especially in Case 3 (a type of a large class), in which the disease was diagnosed in the larynx when the lungs were still healthy, or, at all events, at a time when the eye could distinguish the visible changes in the larynx long before the changes, if any, in the lungs, were appreciable to the faculty of hearing.

In Cases 4 and 5, this fact is still more clearly brought out, for in the former there is evidence of these having existed for upward of two years before occurrence of throat or chest symptoms; ulceration of the tongue in the same situation, and undoubtedly of the same character as when the patient later came under our care with extension of the disease to larynx and lungs. It is noteworthy in this connection that though the lingual ulceration had recovered in the summer, it had broken out afresh with each succession of winter.

In Case 5, there can hardly be a doubt but that the peculiar condition of the gums, which healed twice after removal of teeth and under the influence of a better climate, to recur at once on return to England, and later, after an acute attack of pneumonia, was of the same nature as the ulcers later developed on the velum palati, tongue and buccal surface. In corroboration of this view may be cited the fact that many eminent physicians and surgeons had agreed not to consider the case tuberculous prior to the lung evidences, and Dr. Douglas Powell, who saw the case with us, has no doubt as to the tuberculous identity of the various manifestations in the mouth and pharynx.

*Etiology.*—The causes of the disease are fairly illustrated in these cases. We find, as an invariable element, a low state of vitality, either hereditary or acquired, with a resulting feebleness of recuperative power. Less invariably there is some local irritation, as in Case 3, in which the continued strain on the patient's vocal organs in the pursuit of his calling as an auctioneer produced what in an individual of greater power would, with proper care, have passed off as a simple laryngitis, but to paraphrase a well-known dictum we may say: "Une laryngite negligée c'est une phthisie commencée." In another instance (Case 5) the local irritation of diseased teeth, as proved by the improvement following extractions, was the exciting cause of a tuberculous ulceration of the gums and mouth. In several, there was temporary improvement in summer or on favorable change of residence.

In the two cases in which a syphilitic element might be charged as the cause of the disease, there is sufficient clinical and circumstantial proof of a negative.

The symptoms as narrated in the foregoing cases are so typical, as to enable even those unaccustomed to the use of the laryngoscope to diagnose the condition with tolerable certainty. Briefly, the emaciation and loss of weight, night-sweats, aphonia, cough with profuse laryngorrhœa of semi-purulent character, pain only in deglutition, more marked in the case of fluids, with tenderness on pressure of the

larynx, afford an unmistakable picture of the disease in question.

In cancer, besides its more marked cachexia, the disease is distinguished by the constant presence of pain, independently of functional acts, as well as its occurrence in deglutition, being more intense in the case of solids than of fluids. Syphilis gives a hoarse, rather than an aphonic character to the voice; is, on the whole, free from pain, and has other symptoms of its own sufficiently distinctive to afford a reliable guide.\* Anchylosis of the crico-arytenoid articulation, paralysis of laryngeal muscles, as from pressure on the nerves supplying them, or following in diphtheria and other diseases, are unaccompanied by general emaciation, unless in the case of nerve pressure the paralysis be due to a malignant growth. Thus, in a general way, the symptoms, apart from the physical signs, give a fair clue to the presence of laryngeal phthisis.

It is, however, only by a recognition of the characteristic appearances as reflected in the laryngoscope that a certain diagnosis can be made. These appearances are the peculiar semi-solid swelling and worm-eaten ulceration of the epiglottis and ary-epiglottic folds often described by other authors and well illustrated in the figures accompanying this paper. The swelling is often much greater on one side than the other, but we never see tumefaction of the tissues covering one arytenoid cartilage much advanced without a similar condition existing to some extent over the other side also, thus distinguishing it from cancer and from non-tuberculous perichondritis. We have used the word semi-solid as applied to the swelling, but its resemblance under the light of the laryngoscopic lamp to serous or purulent effusions is often so complete as to mislead even practised observers.

The ulceration of laryngeal phthisis has been, for what reason we know not, a stumbling-block to many laryngoscopists. Von Ziemssen† states: "Neither the catarrh

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\* For a very succinct and well considered account of these differences, see Dr. E. J. Moure's essay, "De la Syphilis et de la Phthisie Laryngées au point de vue du diagnostic." Paris, 1879.

† *Encyclopedia of Medicine*, vol. vii, p. 848.

nor the ulceration of phthisical subjects presents any characteristic signs by which it could be recognized as such." This assertion one of us ventured to combat on its first appearance. We, however, find Dr. Vivian Poore\* telling his students at the London University College that "this is perfectly true, and that his experience enables him to endorse this assertion." Cohen† is of much the same opinion, and says "that the aspect of these ulcerations is hardly sufficiently characteristic for differential diagnosis, without reference to the cachexia." Even Mackenzie,‡ whose earlier writings taught differently (see his essays in Reynolds§ and Aitken||), although he describes very minutely and accurately the characteristic differences between the various specific ulcerations to which the larynx is subject, now gives in his adhesion to Heinze, and is of opinion that the latter "very properly declines to accept descriptions of the laryngoscopic appearances of tubercle (by TerMaten, Türck and others), remarking that even in the case of a larynx fresh from the body, it is impossible to determine absolutely with the naked eye whether the ulceration is tubercular or not."

Granted, with Mackenzie¶ and Cohen, that in cases in which syphilis attacks phthisical patients, by no means so common now as before the recognition of pharyngeal tuberculosis, the diagnosis may occasionally be difficult, we cannot in spite of the array of authorities which we have quoted against ourselves, admit the non-existence of a truly characteristic tuberculous ulceration in the larynx. On the contrary, we believe in it most firmly, and we venture to speak boldly on this question from a clinical standpoint, in opposition to the timorous who will not admit tubercle without distinct pulmonary evidence during life or microscopic examination after death. We can only further say that with the exception of laryngeal growths, we know

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\* *Lancet*, July 17, 1880, p. 83.

† "Diseases of the Throat," 2d edition, p. 572.

‡ "Diseases of the Throat and Nose," p. 37.

§ *System of Medicine*, vol. iii, p. 460.

|| *Science of Medicine*, vol. ii, p. 712.

¶ Loc. cit., p. 362.

no disease in which, with the laryngoscope, we can be so sure of our diagnosis, and that, so far from being dependent for confirmation on an examination of the chest, we have in not a few instances diagnosed the disease in the larynx in spite of opinions of eminent auscultators that the chest was sound. To more particularly formularize our views on this important point, we hold that, given the characteristic gray semi-solid infiltration of epiglottis, ary-epiglottic folds, or both,—an appearance we consider almost invariably the precursor of ulceration,—there is a form of ulcer superimposed on the swollen tissue, which we believe distinctly characteristic, and which we are able to foretell is incurable. In the absence, however, of the thickening, the character of the ulceration is hardly less typical. It is in itself essentially one of that class in which there is absence of healing, owing to defect of action. We do not desire to reiterate descriptions often already detailed, nor can we hope to rival or to add much, many as are the years that have passed since it was written, to the graphic truth of the word-picture drawn of tuberculous ulceration by Türck, but these one or two points we would emphasize. The floor of a tuberculous ulcer is pale and granular and slightly depressed, the margins are fairly well marked but not deeply excavated, the surrounding parts pale and languid, and there is an appearance of a spreading process of erosion very comparable to that of the nibbling of a small rodent animal. This is due to the confluence of small ulcers produced by the slow incurable inflammation of the mucous and closed follicles of the mucous membrane, and also to the ejection of minute tubercles which have worked their way to the surface. Very different from this is the punched-out, areolated excavation which is seen in tertiary syphilis, and which may be considered suggestive of a bite rather than of the continued nibbling to which we have likened the tuberculous ulcer. Nor need we insist on the angry, hyperæmic, thickened walls of a cancerous ulceration, with its accompanying deformities and other signs, to still further point the laryngoscopic diagnosis.

We only ask the merest tyro in laryngoscopy to study carefully the wood-cuts of Türck, or even of Cohen and of Mackenzie, to say nothing of the colored illustrations accompanying this paper (which are, moreover, typical, not exceptional), and in our other published work,\* and having studied them, to decide for himself whether Ziemssen† is justified in stating that "the attempts made to establish pathognomonic peculiarities cannot be said to have succeeded." So far have we indicated with detail the intrinsic characters of the ulcer *per se*, which point to a phthisical condition. As for simple, chronic laryngitis with ulceration, the rarity of this affection is so great apart from phthisis, that Heinze reports (setting aside cases of syphilis, cancer or diphtheria) but six per cent. of cases of laryngeal ulceration, unaccompanied by tubercle, and these few are further referred to typhoid. The further examination of neighboring parts enables us to make as safe a provisional diagnosis as surgery in general admits, and certainly much more so than is usually possible in the domain of internal medicine. Thus, the condition of the pharynx and palate, be it in the pallid-veined condition of Cases 1 and 2, or in the well-marked state of tubercular ulceration as in Case 5, gives an unmistakable clue to the nature of the malady. The absence of evidence of syphilitic disease in the pharynx and of the deposit of cancerous material in the neighboring lymphatic glands, further aids by a process of exclusion to a complete diagnosis.

The temperature and the condition of the other organs of the body afford collateral evidence to the importance of which we need only allude, but with regard to the temperature, we have not found the variations of such extent as is usual in ordinary cases of pulmonary phthisis. This is due, no doubt, to the inanition caused by the odynphagia which, in its turn, contributes so much to the more rapidly fatal termination of these cases.

As to the pathology we have in this, as in all our work,

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\* The Throat and its Diseases, by Lennox Browne.

† Loc. cit., page 848.

endeavored to give our views on this head from the point of clinical observation, rather than in the shape of *post-mortem* reports, which last should be used, as we think, to confirm or correct diagnoses made during life, not, as is too much the fashion in these days, as the starting-post of theories. From a comparison, however, of the views of Rindfleisch, Isambert, Heinze, and other authors, and from the microscopical examination of the larynges of the cases now reported, we may briefly quote from Dr. Grant's Edinburgh graduation thesis on Laryngeal Phthisis, dated April, 1879, "that the tumefaction of the larynx, characteristic of phthisis, is due to an infiltration, in part inflammatory, but in great measure composed of that adenoid proliferation which is found in scrofulous subjects to undergo a caseous degeneration. The deposition of this material, the concrete expression of the defective vitality of the tissues, leads to those progressive incurable conditions in which the glandular structures take so prominent a part."

*Prognosis.*—The cases before us illustrate the unfavorable prognosis which alone we are entitled to give, both as regards recovery and duration of life.

The frequency of a rapidly fatal issue is due, as already stated, to the odynphagia which, by preventing the taking of proper food, adds the effects of starvation to that of uncomplicated phthisis, for, although cases are not uncommonly reported of patients affected with dysphagia from other causes preserving life for nearly the natural span on spoon diet, in such as we are now considering, the enfeebled system, unable to sustain itself on a comparatively full diet, is much less capable of counteracting by slops and sops the rapid wasting the disease produces.

The prognosis, as to duration, is, that given the degree of pulmonary disease, the rapidity of termination is greater in proportion to the amount of difficulty in swallowing.

Coming to the question of treatment, we must say that we were somewhat surprised at the recent Congress of Laryngology, at Milan, to hear several of our German confrères relate cases of *cure* of laryngeal phthisis as an ordi-

nary result to be expected from the treatment advocated, and we can only account for the discrepancy between their experience and ours by supposing either that the disease assumes a very different type in the two countries, or, as is possible, that we are not in exact agreement as to the nature of the disease to which the term "throat consumption" is applicable. Iodide of potassium, which Dr. Schmidt, of Frankfurt, stated in debate to have found so efficacious in curing tuberculous ulceration of the throat, is, in our experience, painful rather than beneficial. As cases in point, it certainly had no good effect in the two instances (Cases 4 and 5) in which it had been administered in view of a possible faulty diagnosis. Nor have we found complete functional rest, as advised by others, even possible in those cases which we have treated, though we agree in enjoining vocal rest and administration of the softest possible food. Nor have we ever once seen any good but almost always the contrary result from incisions into the swollen tissues also advocated by Dr. Schmidt.

On the other hand, our experience, as shown in the foregoing and in other cases, leads us to subscribe cordially to the opinion expressed by Krishaber, Ziemssen, and others, that although a tuberculous ulceration in the throat may heal, as in other parts, such a process is certain to be followed, sooner or later, by an outbreak in close proximity. The disease may even become chronic and lie dormant, of which state Cohen reports several cases with praiseworthy assertion as to the final result, but not even the most sanguine throat specialist is yet justified, according to our experience, in giving even a moderately hopeful opinion as to result.

The indications for treatment are, in our experience, purely palliative, and are :

1. To counteract the general phthisical processes.
2. To allay the cough.
3. To relieve the pain in swallowing.
4. To heal the ulceration.
5. To check perspiration and profuse laryngorrhœa.
6. To administer suitable nourishment.

Not to take these separately, we may say that the usual

rules as to climate and hygiene are to be followed, and the generally accepted medicines administered according to circumstances. Cod liver oil when it can be digested pure is of eminent service, but when combined with maltine (as in the justly recommended preparations of Kepler, or of the Maltine Company) the effect is much more striking. We have then the diastatic action on starchy matters, combined with the nutritive fatty material so much required in phthisis, and at the same time the digestive elements peculiar to the bile. The hypophosphites containing phosphorus in a loosely combined and easily assimilable form, are, when carefully dosed, so as not to produce diarrhœa, probably the most valuable remedies we possess, especially in cases in which there is marked nervous depression. They remove this depression, and as Dr. Coghill has proved at Ventnor, they certainly in a large number of instances, improve the power of assimilating fat. Under their action, we see in many patients such a remarkable filling out of the face, as to convince one that there is an effect which no mere stimulant could produce.

A well thickened mixture containing small doses of morphia is most efficacious when slowly sipped in allaying pain and cough, and along with the local applications to be now described, assists in carrying out the indications for relieving the pain in swallowing, and for assisting the healing of the ulcers. The most generally useful application, is one of chloride of zinc, morphia, glycerine and water. This we have found more efficient than the chloride of zinc alone, and certainly infinitely preferable to the "glycerine morphinée au 25e" recommended so strongly by Isambert as relieving the pain (through the morphia) and favoring cicatrization and the throwing out of the tubercles. We found the glycerine far too irritating to be applied to the tender mucous membrane, when diluted with less than an equal quantity of water. The insufflation of powdered starch with morphia has been tried by us in many instances, but the effect as regarded facilitating deglutition was so discouraging (*vide* Case 3) that we did not feel justified in continuing its use. In addition, the somewhat complicated apparatus was

infinitely less manageable than the ordinary throat-brush, and in spite of the ingenious valve employed in it to prevent the insuction of the secretions of the pharynx, we found it constantly got clogged up by these fluids. In every respect, therefore, we consider the laryngeal brush charged with the chloride of zinc and morphia solution a very much preferable application. The compound tincture of benzoin mixed with egg gave such relief (after many other applications had failed) in the case of the ulcerations in Case 5, as to claim for it a more extended trial. The galvano-cautery, while it gave no relief in the tubercular ulcer on the tongue in Case 4, certainly proved beneficial in the faucial tubercle in that of Case 5. There is reason for hoping for good results from its use.

Scarifications seemed urgently called for in Case 1, and possibly relieved immediate risk of complete obstruction to the larynx, but certainly the rapid spread of ulceration at the punctured spots proved the inadmissibility of this plan of treatment. As an antidiaphoretic, the administration of sulphate of atropia, in pills containing from the  $\frac{1}{75}$  to the  $\frac{1}{60}$  of a grain has given excellent results, and its drying action on the mucous membrane is particularly appropriate in those cases in which there is very profuse discharge from the mouth, pharynx and larynx. The sucking of ice is, in general, successful in dulling the pain in deglutition, and should always be practised, at least tentatively. It has been proposed to allow rest to the larynx during deglutition, by adopting the rectal mode of feeding, and during respiration, by the performance of tracheotomy. The insufficiency of nutrient enemata for the support of an individual whose assimilative power is at a minimum, seems too obvious to require much experimental proof, but in case where the diagnosis was doubtful, it would be only right to give this plan of treatment a fair trial.

As regards tracheotomy, it is only necessary to bear in mind the essentially unstable condition of the lungs in a subject of laryngeal phthisis, to restrain us from admitting cold air through any shorter warming passage than that supplied by nature. Again, from a pathological point of

view, the rapid degeneration of cartilage met with in this disease would offer little inducement to the infliction of a wound on the windpipe with the subsequent retention of an irritating foreign body in the shape of a tracheal canula. Lastly, we would strongly deprecate the performance of a risky operation in an enfeebled patient in whom the benefit to be derived is of such a problematical nature.

As to the kind of food indicated by the nature of the local disease, we find soft, thick food generally the most acceptable, and as a type of this may be quoted the raw egg either beaten up, or simply thrown whole out of the shell into a glass and flavored with vinegar and salt. This last mode is often available when the other, and indeed any food whatever, is beyond the swallowing capacity of the patient. Oysters, thickened soups and milk in various forms, will suggest themselves as suitable in less extreme cases.

Discouraging as are the prospects we now hold out to those suffering from laryngeal phthisis, we may hopefully look forward to the time when, by the patient study of all the cases within our reach, and a careful attention to therapeutic measures on the principles just indicated, we shall find a line of treatment leading on, if not to cure, at least to the prolongation of life with more comfort than has hitherto been obtained; for of this disease, perhaps more than of any other, it may be appropriately said: "*Le médecin guérit rarement, soulage souvent, console toujours.*"

NOTES ON SYPHILITIC STRICTURE OF THE  
LARYNX, WITH AN ACCOUNT OF TWO CASES  
OPERATED UPON BY MEANS OF A NEW CUTTING  
DILATOR.

By W. MACNEILL WHISTLER, M.D., M.R.C.P.,

LONDON.

II.\*

Now, to consider a few of the more interesting points connected with these cases of syphilitic stenosis of the larynx, I shall not venture to encroach upon your valuable space by going very much in detail into the history of catheterization of the larynx; indeed, such a course would be foreign to the purpose of my communication. Much has been said on this subject in such able monographs as those published by Professor Labus,† and Dr. Aack.‡ Suffice it to say that the results of the experiments made by Desault,§ one of them dating as far back as 1793, and pursued by his contemporaries, were such as to lead him to the conclusion that the introduction of catheters, though sometimes possible in laryngeal and tracheal inflammations, was not often indicated, and that bronchotomy was preferable. He advocated catheterization of the air-passages in cases of dyspnœa, consequent upon the lodging of foreign bodies in the œsophagus; also where the trachea was compressed by tumors, and in wounds of the neck. In

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\* For Part I. of these notes see these ARCHIVES, vol. i, p. 322.

† "Il cateterismo e la dilatazione meccanica nelle stenosi della laringe." *Annali Universali de Medicina e Chirurgia*. Vol. 237, fasc. 710, 1876.

‡ "Ueber die Mechanische Behandlung der Larynxstenosen." *Sammlung Klinischer Vorträge*. No. 152, vol. ii, series 6. Leipzig, 1878.

§ Desault : *Œuvres chirurgicales* ; par Xav. Bichat. 2 vols.

caries of the larynx, he found it of uncertain benefit. From those days to the present time, it has had many advocates, and, although the process has not fulfilled all that it was hoped it would do in superseding the more serious operation of tracheotomy, the fact is now well established that the introduction of tubes through the glottis is not only feasible, but comparatively easy, and a valuable remedial agent to have recourse to in certain cases of stenosis of the larynx and trachea. Bouchut's experiments\* were disappointing in their results, and the retention of tubes for any long period has been shown to be badly borne by an acutely inflamed larynx. We have also, since the days of laryngoscopy, more easy and efficient means of making topical applications to the larynx and trachea, than those which were carried out by Dieffenbach and Loiseau,† but their operations are none the less interesting as showing the tolerance of the air-passages to the introduction of instruments. It is, however, as an additional means of averting suffocation in sudden emergencies, that catheterization of the larynx has given the most brilliant results, and as such it is regarded with favor in present times. By means also of special tubes, catheterization is now one of the recognized methods of progressive dilatation, in chronic stricture of the larynx, subsequent to tracheotomy. Other demands may yet possibly be met by this means; in fact, a case has been published only recently by Dr. MacEwen, of Glasgow,‡ in which a very important end was served by introducing a tube into the glottis, namely, the prevention of an escape of blood into the air-passages during the removal of an epithelioma from the pharynx and base of the tongue.

In no class of cases has the introduction of catheters been more beneficial than in those of syphilitic origin, and many are the records of success in this form of laryngitis, when acute œdema, supervening upon a preëxisting stenosis, has threatened the patient with immediate death.

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\* "Tubage de la glottis." *Bulletin de l'Académie de Médecine*. Vol. 23, 1858.

† *Bulletin de l'Académie de Médecine*. Vol. 22, 1857.

‡ *British Medical Journal*, July, 1880.

In some of these instances the thickening of tissue has been reduced by the presence of the tube, and the stricture has, at least for the time, disappeared. Yet catheterization must in great measure be regarded as a palliative rather than a curative treatment in a large proportion of these cases; tracheotomy still remains the sole means of relief for the greater number.

The temptation to push internal treatment to its utmost limit, is, of course, great in syphilitic stenosis, when we remember the apparently hopeless cases that are every day rescued from asphyxia by mercury and iodide of potassium. When, however, the stricture is very narrow; if it be chronic, and especially if it be associated with much fibrinous growth, these remedies fail sometimes to give relief, and we wait in vain for the good effects obtained in other specific lesions. Doubtless deficient æration of the blood interferes with the action of the medicines, and, by impeding repair, gives rise to irremediable deformities which baffle our subsequent efforts to remove the tube.

The question of having to wear a tracheal canula permanently is, naturally, one of very serious import. The interference with speech, the wearer's somewhat singular appearance, the danger of bronchial and pulmonary inflammation, the risk of tracheal disease, and the secondary narrowing of the air-tube, are reasons which alone have influenced many a patient against submitting to tracheotomy. Fortunately, the more serious results do not often occur; yet, when they do arise, no cases are more wearing to the patient, or more perplexing to the surgeon. It is not surprising, then, that the subject of being eventually able to dispense with the tracheal tube, has occupied the attention of surgeons for a long period. We find that more than fifty years ago Liston was giving his serious thought to this matter. He reports a case \* under his care in 1829, in which he succeeded in dilating a strictured larynx, and removing the tracheal tube. The patient was a young woman who, in attempting suicide, had made an incision through the crico-thyroid membrane. A silver tube was introduced

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\* Liston : *Elements of Surgery*, London, 1831.

through the wound, and after several months' treatment, she was discharged with loss of voice, and wearing the tube. Some months after this she consulted Mr. Liston, who found the larynx greatly contracted; the stricture only admitting a very fine probe. This was dilated by bougies introduced through the wound in the neck, until the normal diameter was restored. Mr. Liston subsequently dilated a stricture also which was found in the trachea. A long tube was introduced by the wound up into the mouth, there laid hold of and pushed down into the trachea. This tube, which was nine inches long and equal in diameter to the largest œsophageal tube, was retained in the windpipe for fifteen days. Then, as it caused great irritation, it was withdrawn, and the wound was closed. The patient breathed well at first, then dyspnœa came on, and tracheotomy below the thyroid isthmus was performed. A few weeks after this the canula was removed, and the wound closed. The woman continued to breathe well, and slowly recovered her voice. She was in very good health some years after the restoration of the air-tube. No more thorough work has been done, or more perfect result been obtained in similar cases since that date, and I have ventured, therefore, to relate the case somewhat at length. Mr. Liston, in his article on tracheotomy,\* in speaking of certain cases where the tube may not subsequently be removed, says: "The box of the larynx has fallen in, as it were, in consequence of having been long disused, and is unable to resume its functions to their full extent. Besides, great though gradual change of structure has in all probability taken place. In several such cases, I have attempted to restore the natural dimensions of the passage by the occasional introduction of bougies gradually increased in size; but in none have I completely succeeded, excepting in the case of suicide, which has already been detailed shortly. In all, my attempts were at first followed by encouraging amelioration, but untoward symptoms occurring, forced me to abandon them, though repeatedly persevered in. In one man I succeeded in restoring natural respiration, but it was

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\* *Op. cit.*

not of long continuance ; a fresh accession of œdema glottidis made renewal of the artificial opening absolutely necessary. Still the results are not such as to forbid further trials, and at any rate, it is now well understood, that much greater freedom may be safely used with the air-tube than was formerly imagined."

These are interesting records of a pre-laryngoscopic period, and the views entertained by Mr. Liston are in many respects singularly in accordance with the conclusions arrived at by later operators.

No serious attempts appear to have been made for some time after this to push these investigations further, and it is only of late years, and when the laryngoscope afforded more opportunity for accurate study of these lesions, that systematic dilatation of laryngeal strictures has been carried out fully, and in not a few cases with excellent results. I will not here enter into a description of all the operations which, beginning with Czermak's case in 1858, have been so fully discussed in well-known treatises, and notably in that published by Professor Schroetter.\* In the earlier operations carried out for strictures of varied origin, there was not sufficient improvement to admit of the canula being removed, although in several of them benefit was derived.

Most of these dilatations were made through the tracheal wound from below upward, some of them by bougies, and a few by ingeniously devised tracheal canulæ. Some of the operations, which gave hope of success at first, owed their failure either to too early cessation of treatment, or to the intolerance of the parts to the instruments. I must not omit here to note a successful operation by M. Delore,† performed in 1864 in a case of syphilitic stenosis of the larynx in a woman. This stricture was seen with the laryngoscope and, added to it, the epiglottis was much destroyed and bound down by cicatricial bands. Tracheotomy was done as suffocation was imminent. Later, M. Delore by the aid of the laryngoscope split the stricture with a litho-

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\* *Beitrag zur Behandlung der Larynx-Stenosen.* Wien, 1876.

† *Traité des Maladies Vénériennes : Rollet.* p. 871 : Paris, 1865.

tome, and it was subsequently enlarged by two more incisions. The passage was dilated as well by an œsophageal forceps, and so free breathing was restored. Professor Schroetter, who instituted a process of systematic dilatation of the larynx by operating from above and through the mouth, gave a new impetus to these procedures, and his results, and others since his experiments, have been more encouraging. His operations, begun in 1872, were practised upon cases in which, as the result of perichondritis, there was more or less alteration in the cartilages; immobility of one or both arytenoids; thickening of submucous tissue, or of the mucous membrane, with cicatrices. The perichondritis was most frequently the result of typhus, variola, or syphilis. His process of dilatation may be divided into three stages; the first of which consists in establishing a tolerance to instruments by the introduction of elastic catheters into the larynx. After this object is attained, a catheter of requisite size is introduced daily through the stricture, and when, after a few days, the patients are able to bear the retention of the catheter for a period varying from five to thirty minutes, the third stage commences. This consists in progressive dilatation by metallic bougies which are fixed in the stricture. They are introduced by means of a hollow staff through which passes a cord, one end of which is attached to the handle and the other to the bougie. When once in place, the bougie is fastened in the tracheal canula either by means of small forceps introduced into the canula, or by a projection from the inner canula which passes through a hole in the point of the bougie. The staff is then detached and withdrawn, while the cord is drawn out of the mouth and attached to the band of the canula. In the work referred to, Professor Schroetter gives a report of eleven cases so treated. In seven of these the stenosis was cured, many retaining a fairly good voice; and all were reported to be capable of doing without the canula, though, so far as I can see, the tubes had not yet been removed in most of the cases at the time of publication. Two others, when almost well, were obliged to leave Vienna, and two were still under treatment, progressing favorably.

The period of treatment varied from three months to three years. Three of these strictures were due to syphilis and were associated with perichondritis. In the first one the dilatation was undertaken two years after tracheotomy. He was discharged cured at the end of two years. One year after this he was breathing well through the dilated glottis; following his occupation as a coachman, and having a good, though somewhat rough, voice. In the second case dilatation was commenced fifteen months after tracheotomy, and the stricture then admitted a number eight English catheter. This patient remained only four months under treatment, and left uncured; still at the end of this time the stricture admitted number fifty bougie. Œdema of the left arytenoid came on during treatment, with fœtor of breath; the treatment was not discontinued and the œdema subsided. The third case presented more difficulties. The lesions in the larynx were thickening of the epiglottis and ary-epiglottic folds with perichondritis and caries of the cartilages. Dilatation with bougies began three months after laryngotomy. Iodide of potassium was given at the same time. This patient did very well at first, being very tolerant of the bougies, eating well and sleeping comfortably with them. Subsequently he coughed up a piece of necrosed cartilage. After three months, a full size laryngeal catheter could be passed, and the tracheal tube was removed, but was replaced owing to dyspnœa. Stenosis of the canal below the tracheal wound was found, and a membranous web was destroyed by galvano-cautery. After dilating the trachea both laryngeal and tracheal stenosis were completely cured. This patient was discharged after nine months' treatment, to await the reopening of the clinique for the removal of the tracheotomy tube.

Dr. Trendelenburg, operating about the same year as Professor Schroetter, has added another to the list of remarkable cases of this nature,\* and it would be difficult to find one which more clearly illustrates the many complications which may arise. The stricture was due to syphilis involving the larynx and trachea, causing aphonia and dyspnœa.

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\* Langenbeck : *Archiv für Klin. Chirurgie*. Vol. xiii, p. 335; 1872.

The epiglottis was deeply ulcerated, thickened, and tightly bound down over the larynx. Tracheotomy was performed twice within a few months; the second time on account of tracheal ulceration. In this way a cicatricial web was found blocking up the trachea behind the thyroid isthmus. The web was cut down upon through the trachea and divided; the tracheal stricture being dilated by metallic bougies for three weeks. The patient's voice was restored, but the breathing was as bad as ever when the canula was removed. As Dr. Trendelenburg thought that the dyspnœa was now due to falling in of the tracheal wall during inspiration, he introduced into this tube an artificial segment of trachea, as it were, made of a spiral spring covered with india-rubber, to keep the walls apart. Still the canula could not be removed. It was concluded next, that the epiglottis which was still pressed tightly over the larynx was the cause of the dyspnœa. To verify this the epiglottis was raised by a ligature, and the patient at once breathed better. The epiglottis was cut away, but the patient could not dispense with the tube. Paralysis of the abductors of the vocal cords was discovered now, for which both Faradization and dilatation were carried on. The glottis, after one year's time, was widened, and breathing was easy with the tube corked up. The canula was removed, but had to be replaced in a few hours. The idea of dispensing with the tube was at last abandoned. Still neither the glottis nor the trachea contracted; the patient could pass full size bougies, and she breathed freely with the canula permanently stopped, although no air passed by the side of the tube. Speculation upon the seemingly unaccountable obstruction to breathing would here be difficult. Possibly some hidden thickening of the trachea still remained, which, being only pushed aside by the dilating tubes, gradually encroached on the lumen of the trachea on their withdrawal, until the space was obliterated. This, combined with the paralysis of abduction which seems not to have been thoroughly cured, though greatly relieved, and possibly also some spasm of adduction on inspiration, might be the cause. These are only some of the hindrances to a cure which may arise from

having worn a tracheal canula for a long time. I can call to mind in my own practice more than one case where, after tracheotomy, one or more of these causes have proved impediments to perfect breathing. This much may be said for causes arising from morbid processes in the upper air passages, but even slight emphysema of the lungs, so apt to be found in these cases of stenosis, though less troublesome under other circumstances, would be no small factor in increasing the dyspnœa when added to the changes just mentioned. Dr. Trendelenburg calls attention to the liability there is to impaired power in the abductors of the vocal cords in those patients who have long breathed through a tracheal tube. He accounts for this by the fact that while these muscles are at rest, the adductors are called upon to close the glottis during every act of swallowing. In the second of my cases reported in this paper there remains certainly a slight amount of this paresis, though not enough to cause dyspnœa. Dr. Trendelenburg makes a valuable suggestion to prevent this consequence, namely, that the orifice of the tube should be partially blocked up by a perforated plug as soon after tracheotomy as is practicable. By this means the patient will be induced to breathe to a certain extent through the mouth, in order to compensate for the diminished column of air below. This means might be resorted to without distressing the patient, and would assist in a measure in dilating the stricture, as was done by Professor Gerhardt,\* who in 1869 effected dilatation of a tight stricture of the larynx entirely by the stream of air, the patient having been instructed to cork up the tube for hours together as the glottis increased in width.

Another well-known operator is Professor Navratil, of Pesth, who was conducting experiments about the same time as Schroetter and Trendelenburg. He invented a dilator with which he obtained good results. He reports† among his later operations a case of syphilitic stenosis of the larynx treated by him in 1875, and resulting from an ulcerating laryngitis with perichondritis. The dilatation

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\* *Archiv für Klinische Medicin* ; vol. xi, 1873.

† *Annales des Maladies de l'Oreille et du Larynx*, vol. iv, Paris, 1878.

was made four months after laryngo-tracheotomy, at which time the active disease in the larynx had been arrested, and there remained a cicatricial narrowing below the cords, reducing the glottic opening to three millimetres. There was also complete destruction of the left cord, and partial destruction of the right one. The dilatation was effected by means of an improved dilator of Professor Navratil's design, consisting of four diverging blades, and at the end of four months the tracheal canula was permanently removed, the glottis having reached nearly its normal dimensions. There was plenty of breathing space, and the muscles of the larynx acted well.

Many more important cases might be cited by me did time allow, but I must stop. I am well aware that in the sketch I have given I have omitted to mention several important cases of successful dilatations of laryngeal strictures, such, for instance, as the cases of Professor Labus.\* I have, however, sought to confine my references more especially to strictures of the larynx of syphilitic origin. Even of these I have not touched on all. Among the other interesting operations, not least are the membrani-form occlusions of the glottis removed by Prof. Elsberg, described by him in 1874, and recently in these ARCHIVES; also a case of dilatation by Dr. Asch, reported in the same journal.

Still, in looking over the list of good results obtained, we must not forget that in these operations many are the failures which might be put down to overbalance the successes, and experience teaches all of us who are, specially, workers in this field that the question of the permanent advantage to be derived from dilatation in syphilitic stenosis is far from settled. In cases of recurrent laryngitis of the intermediate period, acute attacks of inflammation, associated with swelling and œdema, threatening suffocation, may be averted by catheterization. In my own practice, I have found such cases generally yield to rest and internal treatment. I have never met with any lesion in an earlier stage which could give rise to very serious dyspnœa. Deprés re-

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\* Op. cit.

ports a case \* occurring during the first year of infection, accompanied by secondary lesions, which required tracheotomy, and subsequently resisted all his attempts at dilatation. His views with regard to the laryngeal obstruction were that it was caused by a large mass of mucous patches which had become the seat of vegetations. If this diagnosis were correct, it would seem that evulsion of the growths, with or without tracheotomy, would be indicated rather than dilatation. As regards the tertiary affections where dilatation is essential to overcome the laryngeal obstruction, the ultimate result of this operation must depend in a great measure upon the stage which the affection has reached.

In attempting to arrive at any estimate, perhaps it will be as well here to class these lesions under two main divisions—the acute and chronic stages of the tertiary period. This has, for a long while, appeared to me to be the most satisfactory and rational classification for the study and treatment of these later manifestations. The former include gummatus growths, either tumors or, far more often, softened gummata, with consequent ulceration. These, either single or multiple, are the laryngoscopic signs which we meet with in the large class of patients who present themselves for treatment with symptoms of hoarseness, deep-seated pain in the larynx, tenderness on pressure over the thyroid, and acute and, at times, dangerous suffocative attacks. In these cases we find a history of earlier infection, dating from three years to ten or more years before. Former symptoms have been treated, and a period of perfect immunity of varying length has preceded the laryngeal attack. In my experience, and I have treated many such cases, the cure, if treatment be instituted early, is almost as rapid as the onset and march of the disease were. Rest and specific treatment work wonders in these cases. They give the happy and misleading results that induce us to expect cures in syphilitic laryngitis, more often, without tracheotomy. The reverse of this is too well known to require to be more than noted, and the long list of cases steadily drifting to bron-

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\* *Gazette des Hôpitaux*, 1869.

chotomy proves the fallacy of our hope. I believe that in these acute cases where we have to deal with patients otherwise healthy, the failures are the exception. I have met with failures in those of intemperate habits, among the poor, and those who are much exposed. In women, it has seemed to me that pregnancy and nursing their children have a bad influence on the progress of the case. Whatever the cause may be, should the disease not be arrested, or should one or two attacks have preceded, a more chronic inflammation supervenes. In this fibrous growth is a more marked element than in the former class, but the ulcerative process is also still active. In these cases, although pain and cough with intense hoarseness are always present, dyspnoea is a more painful symptom. These are the patients who come time and again to seek relief; who get better, certainly, but in whom the parts are never entirely restored to their normal state. They comprise the large class of laryngeal deformities, with cicatricial stenosis. The laryngoscopic signs are livid redness of the mucous membrane; thickening everywhere, but ulceration as well; ulceration deep and destructive; an epiglottis more or less eaten away, and bound tightly down by adhesions; an imperfect view of destroyed cords with impaired movements; a narrow glottis and adhesions between the bands. Tracheotomy is the almost certain fate of a tolerably large proportion of these cases, this being rendered necessary either by acute inflammatory swelling closing up the already narrowed glottis, through acute œdema coming on in the course of perichondritis, or through cicatricial contraction. The last stage, and, happily, the least frequent, so far as my experience teaches me, is that where fibrous growth is, out of all proportion, in excess of the morbid processes. Steadily progressing dyspnoea marks its course. Acute inflammatory attacks occur as in the preceding class, giving to these cases also a recurrent type, but when the swelling subsides the thickening is seen to be as great as before. Very rarely have I known their course to be arrested, though I have met with such a result. I have never seen the growth diminish under any treatment. The laryngoscopic appear-

ances are pale redness and even pallor of the larynx, excepting during an acute exacerbation; an epiglottis knotted and hypertrophied, in extreme cases to very many times its normal size; the ary-epiglottic folds and ventricular bands twisted and thickened into a distorted mass; deep furrows alternating everywhere with knobs of tissue; a thickened fold encroaching upon the space behind; and a more or less narrow glottis bounded by thickened and rigid vocal cords. The same hypertrophy of tissue extends at times below the glottis into the trachea. These cases, which I have been in the habit of describing as chronic fibroid of the tertiary stage, are slow in their progress, and may drag on sometimes for two or three years, or even more, under favorable circumstances; but if subject to frequent acute exacerbations, they end fatally in a short period.

Taking, then, this division of tertiary affections of the larynx into acute gummatous inflammation, fibro-gummatous or relapsing laryngitis of the tertiary period with cicatricial deformities, and chronic fibroids, I think it may be fairly cited from the experience of former operations, that successful dilatation of the larynx may be regarded as probable among cases of the first two classes. In the third class tracheotomy is, as a rule, imperative, and, remembering the almost certainty that even with the best directed and most energetic internal treatment there is no retrograde movement in the morbid process and rarely a halt for long, tracheotomy should not be delayed after this change is fully established and breathing is affected. When, however, it is performed, there is no benefit to be looked for from mechanical dilatation.

Finally, I would dwell upon two practical and highly important points in all these cases as having a direct influence upon a successful result: 1st. Early tracheotomy to decarbonize the blood and admit of reparative change, as well as to avoid pulmonary irritation. 2d. Early subsequent efforts at dilatation to prevent those morbid processes which may arise locally from pressure of the tube, or by extension in the lungs, at the same time guarding against a too early withdrawal of the tracheal tube.

Touching the laryngeal dilator I have operated with, I would note the facility with which it may be introduced, and the advantage it possesses as a cutting and dilating instrument. By putting the tissues on the stretch before the incision is made, it enables this to be carried out with more precision than if it were effected by a knife alone. As the incision may be limited in depth and the tissues be finally divided by laceration, there is less chance of subsequent adhesion. The safety of a guarded blade need not be dwelt upon. When an account of this instrument appeared in 1877, a critic stated that as the dilator concealed the very part it proposed to operate upon, it, of necessity, could not be efficient. Experience has not verified this objection to it, in my hands, and I hope it may be of use to others as well. I do not seek, however, to lay too much stress upon its merits over other instruments which have done equal service in the hands of other operators. In cases as perplexing as these, it is well to have many resources to fall back upon.

## ON THE TREATMENT OF PHARYNGEAL DIPHTHERIA.

BY PROF. DR. OERTEL,\*

MUNICH.

[Communicated in German.]

OF all diseases of the oral and pharyngeal cavity, none offers more inducements for the employment of medicamentous inhalations than diphtheria; and no other method of treatment is better able to fulfil the individual indications, and to allow its effects to be followed, one might almost say, from hour to hour.

Diphtheria is, as I have proved, an infectious disease, caused by a fungus designated as "*micrococcus diphtheriæ*," which, localized in the mouth and pharynx, produces inflammation and fibrinous exudation of the mucous membranes, and, after an undeterminable length of time, general infectious disease, the general infection being dependent upon and kept up by the local. For treatment, this view, in opposition to that formerly held and advocated, especially by Buhl, is of the utmost importance. As to the development and separation of diphtherial membrane, the pathology of epidemic diphtheria in general, and a detailed review of the different methods of treatment, I must refer to my article in the second volume of Ziemssen's *Cyclopædia of Practical Medicine*.

For the local treatment of the local affection, there are two indications, viz.: 1, the annihilation of the producer of the dis-

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\* Precursory communication from the "Respiratory Therapy," to be published in von Ziemssen's *Manual of General Therapeutics*.

ease, and 2, the removal from the affected parts of the products of the disease. I think we are now able better to fulfil both indications in this than in any other infectious disease.

1. Against the cause of the disease, we possess in carbolic acid, though not a specific, yet a most efficient remedy. To produce its antiseptic and antiparasitic effect, we must employ much more concentrated solutions than have been used heretofore. This is the conclusion arrived at by my exclusive application of this agent in diphtheria for two and a half years. In 27 of the gravest cases, of which, I believe, three-fourths would formerly, under every other treatment, have ended fatally, entirely favorable results were obtained; and physicians whom I induced to try the method have had similar experiences. As almost all possible and impossible remedial agents and plans—from the most expectative to the severest medicinal, hydropathic and galvano-caustic—have, at some time or other, been proposed against this disease, carbolic acid has been used and recommended, heretofore, by others and by me, too, for disinfecting gargles and for inhalation. The unsatisfactory results obtained have been due to the insufficient strength of the solution employed, especially on account of fear of the systemic toxic effects of larger doses. But, in the gravest cases of septic diphtheria, it is only when the blood was to such a degree impregnated with carbolic acid that olive-green coloration of the urine appeared, that I have observed a rapid diminution of the disease. I employ for local action on diphtherial mucous membranes, five-per-cent. solutions, nebulized by means of a steam apparatus, and inhaled by the patient. The dilution and change of the finely nebulized carbolic acid by the steam, the fluids of the mouth and the products of the disease, on the one hand, and, on entering into the mucous membrane, by the moisture of the tissues, the serous inflammatory infiltrate, and the blood and lymph in general, on the other, make less concentrated solutions entirely inefficient to prevent the development and increase of the fungous growth. Inhalation on the part of the patient causes a sufficient quantity of the

liquid to be for several minutes in contact with the diseased as well as unaffected parts, and prevents every mechanical injury. I am anxious to avoid every unnecessary irritation of these parts by the touch of brush and sponge. Moritz Schmidt fears injurious consequences from such a mode of applying remedies, even in phthisical ulcers of the larynx, which occur in adults, and are chronic and relatively torpid forms of inflammatory action. How much greater must be the injury in children, who often resist manual performances and necessitate their being made uncertainly and roughly, while, on account of the acute inflammation that is present, the reaction is most intense after every such application. Besides, the quantity introduced is far larger than could possibly be by even repeated brushings; the patients swallow some of the liquid accumulating during the inhalation, in addition; and the very act of swallowing impregnates the spongy exudations all the more with the remedy. Taking into account the activity of the lymphatics of the oral and pharyngeal cavity, I consider the absorption of the carbolic acid by the lymphatics of the mucous membrane exceedingly important for the purpose of making immediately harmless the absorbed morbid products and thus preventing a further infection of the organism. It must not be forgotten that not the pseudo-membranes alone are the carriers of the infecting matter, but also the whole oral and pharyngeal mucous membrane and its secretions, as mucus, saliva and liquids of the mouth generally, whence the disease not only can be transmitted to others, but whence the person himself can be systemically affected.

Finally, I cannot, from my observations, entirely put aside the influence which may be exerted by carbolic acid, taken into the blood, upon the general infection, acting antipyretically, antiseptically, and disinfectingly, however difficult it be to demonstrate such an effect while the same remedy is employed locally.\* In the severest cases treated by inhalation of carbolic acid, there always appeared with the excretion of dark olive-green urine a rapid diminution of the

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Literature furnishes no reliable report of the specifically antiseptic and disinfecting action of carbolic acid given internally, aside from the success of Hebra in psoriasis and other skin diseases.

disease both as to the fever and the local phenomena. In an extremely bad case of scarlatinal diphtheria, in which the whole mouth and pharynx, both choanes, and the upper portion of the larynx, were covered with thick dirty-gray membrane, and the pulse became irregular and intermittent so that I expected hourly the end, I paid no other attention to the urine than to have the inhalations made a little less frequently and of shorter duration. The pulse improved remarkably under the carbolic acid, became continuous, regular and stronger, while the pseudo-membranes rapidly separated and the mucous membrane healed much sooner than could possibly have been expected. I know how little conclusive such individual observations are, but the effect of the carbolic acid was too striking, and agreed too much with other observations, not to refer to it. A detailed discussion of the subject I must reserve for another place.

The inhalations are made every two or three hours and even oftener, for from two to five minutes, according to the severity of the case and the age of the patient. The glass tube conveying the spray is taken almost directly into the mouth. As the patient improves, the inhalations are made less often, say three or four hourly, and of shorter duration, until recovery has taken place. Attention is paid to the urine and to digestion; if the former changes color strikingly or gastric disturbances occur, the inhalations are reduced, or if the urine becomes dark olive-colored, they are omitted for 24 hours, and other solutions, such as from two to four per cent. boracic acid, or five per cent. benzoate of soda, substituted for the carbolic acid. After this interval, if the urine has regained its natural color,—the carbolic acid, therefore, entirely disappeared from the blood,—the former treatment, with the same rules, may be recommenced. In severe cases I have paid no attention to slight grayish discoloration of the urine, but continued the carbolic-acid inhalations until the color became dark green, then changed them to other drugs for 24 hours, and immediately afterward, when the color had become lighter—somewhat grayish—continued the carbolic acid until the subsidence of the fever and separation of the membranes, which then usually soon

occurred. No unpleasant effects have happened to me in any case under these circumstances.

In order to obtain as telling observations as possible, I have selected such cases as were similar in severity, height of fever and extent of pseudo-membranes, and which, I was convinced from my previous experience, would with every other mode of treatment, not only run an extremely grave course, but, in the majority, have a fatal termination; and I have tried to avoid drawing rash conclusions, which the next case might subvert.

2. To hasten the separation of the diphtherial membranes, we may try two methods which assist and increase the processes of nature, viz.: *a.* The loosening of the membranes by suppuration. *b.* The mechanical raising of the membranes by exciting increased secretion of mucus.

*a.* The first method mainly involves the employment of heat, which promotes suppuration and thereby demarkation and separation of the membranes. I therefore use, just as formerly, several times a day, say four to six or eight times, for about a quarter of an hour at a time, hot vapors or steam upon the diseased mucous membrane. With the energetic employment of the carbolic-acid treatment, a much more rapid limitation and separation of the membranes takes place than formerly. This I believe to be due to the diminution of the local infection in consequence of the destruction of the carriers of infection, the fungus and its products, and thereby a diminution of the fibrinous exudation and a possibility of rapid separation by suppuration. According to the case, the patient inhales, the first hour, the nebulized carbolic-acid solution for from two to five minutes, and the next hour, for ten or twelve or fifteen minutes, some disinfecting or cleansing liquid, preferably a weak solution of 0.1 per cent. salicylic acid or a 2-per-cent. solution of common salt or chlorate of potash, the heat employed being the special active agent, and the water and alkali serving for cleansing and for liquifying and removing the mucus.

As I have shown in Ziemssen's *Cyclopædia of Practical Medicine*, the effect of hot vapor is constant and appears in

twelve or eighteen hours; it is delayed when enormous fibrinous exudation, partial destruction of the membrane, and loss of reactivity of the tissues, have already occurred, and is entirely abolished when the disease has progressed to septicæmia and exudation into the trachea and bronchi. The limits of the diphtherial deposits, that had before appeared like delicate hoar-frost, become more distinct, and contrast sharply with the intensely red mucous membrane. Points at which before there were hardly noticeable hemp-seed-sized whitish spots, now show marked islands of varying size, so that the disease itself seems to have increased in severity. The truth is that these portions of mucous membrane, although they had appeared only to be reddened, were already much more diseased, and the hot vapor caused a larger number of pus corpuscles to infiltrate the epithelium infected by micrococci or the delicate fibrinous network wherever the exudation has already taken place. But with the continued use of hot vapors and the adequate application of carbolic acid, the extension of diphtherial deposits soon ceases. The pseudo-membranes gradually become thicker, are raised from the mucous membrane, their whitish-gray color changes to a yellowish, dirty gray, and the surface becomes puckered and uneven, while the redness of the neighboring mucous membrane and the swelling diminish. After a few days, with corresponding suppuration, complete separation of the pseudo-membranes occurs.

According to the appearance of these phenomena, I now reduce the number of hot inhalations on the third or fourth day when the separation is fairly progressing, and the larger part of the membranes off; I continue three or four carbolic-acid inhalations for the next two days, and a recurrence of the disease, renewed infection of the mucous membrane, and repeated formation of diphtherial membranes, I have thus, hitherto, always prevented.

As to other local remedies which may be employed by inhalation in diphtheria, I have found that thymol, eucalyptol, in watery and alcoholic solution, salicylic acid, creasote, benzoate of soda and permanganate of potash, which last, on account of its coloring the diseased parts,

makes their recognition difficult and inconvenient, are decidedly inferior to carbolic acid ; while chlorate of potash is perfectly indifferent, the same as common salt ; and lime-water and lactic acid, although able to dissolve and swell, under certain circumstances, fibrinous coagula, possess no antiseptic or disinfecting properties, and as there is in the mouth and pharynx no want of room, as in the larynx and trachea, and therefore no dangerous stenosis, are not indicated.

The application of these remedies, nebulized by means of compressed air, as by the apparatus of Bergson, etc., injected, or introduced by a brush (which, in all cases, should be a thick, fine-haired one, which takes up a good deal of liquid and allows of its being expressed between the diseased parts without injury), is inferior to the inhalation from the steam-nebulizer, which combines the effect of heat. For gargling, much weaker solutions must be employed.

b. The second method consists in stimulating, by the specific action of *Folia Faborandi* and especially of *Pilocarpinum Muriaticum*,\* the secretion of mucus underneath the pseudo-membranous deposits, thus to bring about their mechanical lifting up, and at the same time the removal of the fungous growths and septic matters from the mouth and pharynx by means of both the accumulated mucus and the accompanying increased secretion of saliva.

Microscopical examination of sections of mucous membrane covered with thick diphtherial deposits in process of separation, shows that the mucus, exuding out of the dilated glandular ducts, tends upward in diverse streamlets, breaks through, in part, the fibrinous coagula immediately over the mouths of the ducts, and permeates the network, and in part enters at the edges between the pseudo-membrane and subepithelial tissue or basal membrane, tears the fibrine threads uniting the two, and lifts up the pseudo-membrane over a more or less large extent. In addition to such observations of the manner in which nature brings

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\* I notice in No. 40 of the *Berlin. Klin. Wochenschrift* that pilocarpinum muriaticum has already been employed in diphtheria and other diseases of the respiratory tract, with favorable results, by Dr. G. Guttman of Constadt, Upper Silesia. I have nothing to add in relation to this publication.

about the removal of diphtherial deposits, a case of diphtheria accidentally complicated by salivation, in which a very rapid separation of the membrane took place, induced me to try this second method ; and on account of the unpleasant collateral effects of *Folia Jaborandi* I restrict myself at present to the use of *Pilocarpinum Muriaticum*. According to the age of the patient, I give it in the dose of from 0.01 to 0.05 gramme dissolved in water, either at one time or at short intervals ; or in adults, especially when the morbid process has existed already several days, I make a subcutaneous injection of from 0.001 to 0.002 gramme. The difference in effect of these two modes of employment is that the increase of the salivary and mucous secretions is slower and less stormy when the pilocarpinum muriaticum is given internally, while hypodermic injection produces it almost immediately.

The separation of older thick pseudo-membranes, under which purulent infiltration has already taken place, occurs with salivation of more or less high grade mostly in larger portions ; while when active fibrinous exudation is still progressing, small bits and flakes are separated and spit out, which in the case of children had best be removed out of the mouth, together with the tough mucus and saliva, by means of a thick and soft hair-brush. Since at the separation of fresh exudations hemorrhages are very frequent, that are apt to lead to septic poisoning, I regard thorough disinfection by occasional inhalation of a five-per-cent. solution of carbolic acid urgently indicated, and order this to be conscientiously done in the manner hereinbefore described. If the exudation of fibrine continues, a renewed formation of pseudo-membranes may occur after the effect of pilocarpinum muriaticum has ceased, just as after mechanical removal or chemical solution ; such cases have already come under my observation, and make, in addition to disinfection, the employment of heat for promoting rapid suppuration necessary.

The effect of pilocarpin to increase the secretion of mucus, extends to the tracheal and bronchial mucous membrane ; it is possible, therefore, that its use, especially by subcu-

taneous injection, and with an emetic, might produce a rapid separation of fibrinous deposits and expectoration thence.\*

Individual favorable observations cannot immediately determine the value of a therapeutic procedure, however scientific its basis, and the "*vis medicatrix naturæ*" is always a factor not accurately determinable; and I urge this method of treatment for trial by others. But in the employment of pilocarpinum muriaticum the condition of the heart must be taken into account; whenever there are signs of disease of the heart—weak, irregular, intermittent pulse—whenever sudden failure of its action is to be feared, this preparation must be used with the greatest care or, better, not at all.

As diphtheria is not to be regarded as a local disease only, and as the accompanying grave general phenomena of the infection require the most comprehensive and thorough attention, inhalations constitute a part of the treatment only, and the additional treatment must vary according to the special indications becoming prominent in the course of the disease. But it should never be forgotten that the general affection is secondary to, depends upon and is kept up by the local; non-recognition or reversal of this fact on the part of the physician has become fatal to many a poor patient.

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\* A recent trial in the case of diphtheria of the larynx and trachea in a child did not, however, give the intended result.

## A CASE OF RETRO-PHARYNGEAL ABSCESS IN THE ADULT.

A PAPER READ BEFORE THE LARYNGOLOGICAL SOCIETY OF PHILADELPHIA,  
Nov. 26, 1880.

By HARRISON ALLEN, M.D.

A gentleman, aged 38 years, consulted me March 30, 1878, for a difficulty in swallowing. The trouble had existed for a month, but during the past fortnight it had become worse. Naturally of spare habit the patient acknowledged having been out of health for two years, and had indeed but four months before recovered from a psoas abscess of obscure origin. His general appearance was that of a man convalescing from wasting disease. His appetite and strength were fair. His morale was excellent.

External examination of the throat revealed a rounded, illy-defined fulness over the thyroid cartilage, with slight displacement of this structure; the upper portion of the cartilage on the right side projected more than that of the opposite side; at the same time the *pomum* was obliterated. The cervical lymphatic glands behind the angle of the lower jaw on the right side were enlarged, and the parts infiltrated. An attempt at swallowing being made, the upward motion of the larynx was seen to be much impaired.

Internal examination by the finger detected a large swelling of the laryngo-pharynx that projected backward and inward over the right side of the laryngeal aperture. Its base was broad, elastic, and cushiony to the touch. With the aid of reflected light the swelling was seen to

be of a bright red color. It was the size of a guinea-hen's egg. It obliterated the right half of the epiglottis.

Retro-pharyngeal abscess was diagnosed, and the patient advised to have the collection opened at once. He was told that the difficulty in swallowing would be relieved by this procedure, and, what was of equal importance, the impending dangers of interference with his breathing, either by direct pressure or by the flow of pus into the windpipe, be averted. He at first declined operative interference since he designed at once returning to his home sixty miles away. The danger of delay being impressed upon him he finally consented the following day to have the collection opened. This was accordingly done with the Mackenzie laryngeal knife, the laryngeal mirror being in position and the patient holding his tongue. Precautions were taken to have everything in readiness to open the windpipe should the pus flow downward. Fortunately this did not occur. The patient brought into the mouth two ounces of laudable pus by gentle regurgitant acts, and spat it out with the blood and mucus. By the next morning the swelling had almost entirely subsided, but a smaller collection was seen in the oropharynx, which being opened, a drachm of pus escaped. This collection was doubtless due to the contraction of the inferior constrictor muscle upon the primary abscess; in the act of ejecting the pus, some of it was squeezed upward behind the oro-pharynx. The patient returned to his home in two days and made a rapid recovery.

This case has several features of interest. In location the abscess resembled a circumscribed laryngeal abscess. Its walls, however, were evidently composed of mucous membrane of the pharynx, and therefore outside of the laryngeal aperture. The larynx was intact, voice perfect, with no history of chondritis and perichondritis. The narrowing of the lumen of the laryngeal vestibule was due to the protrusion of the mass medianly from the lateral wall of the laryngo-pharynx at the pyriform sinus over the right base of the free portion of the epiglottis, and doubtless lifting up and distending the pharyngo-epiglottic fold, though this could not be demonstrated.

The outward and upward pressure of the pus against the great cornu of the hyoid bone and the superior cornu of the thyroid cartilage explained the displacement of the larynx. Was this displacement characteristic? Could this sign be relied upon in locating a swelling in the sub-mucous tissue of the pyriform sinus?

Compared with descriptions of circumscribed laryngeal abscess the case agrees in the occurrence of dysphagia; but differs in the absence of hoarseness, aphonia, pain and cough. The abscess when opened was not discharged with cough as is mentioned to be the case in true laryngeal abscess.

Compared with descriptions of retro-pharyngeal abscess the case agrees in the presence of a swelling behind the angle of the jaw, and the involvement of the cervical lymphatic glands.

Retro-pharyngeal abscess being more common in children than adults, the descriptions given us relate almost entirely to this variety. It is very evident that the case described, whether due to the fact of its occurrence in an adult or to individual peculiarities merely, did not conform in all respects to the general rule. Thus there was no snoring in sleep, no cough, no inclination of the head, no history of inflammatory constitutional symptoms, vertebral disease, or involvement of the oro-pharynx. Nor was any difficulty presented in examination of the parts. Further, no tendency existed for the pus to flow into the larynx. The patient by voluntary efforts brought it into the mouth. This would have been impracticable in a child, and, indeed, even so in an adult if the pus had been thin and sanious. It may be inferred from the last statement that when vertebral disease is eliminated in a case of retro-pharyngeal abscess in the adult, the head need not be drawn forward in opening the collection. There was no tendency to an early fatal termination. The pus had no doubt been present for five weeks, and probably longer before it was evacuated. Its presence was dangerous beyond a doubt, but it is certain that no symptom beyond dysphagia had presented itself. The patient was more inconvenienced than

made ill by the abscess. He had travelled a long distance without discomfort. He was actually disinclined to be operated upon. The reverse of this is almost universally true when dyspnœa is present.

The history of psoas abscess suggests irritation from spondylitis or ostitis as a cause, but none could be detected. The escaped pus was healthy; the subsequent history of the case was unfavorable to this supposition.

It is quite likely that the abscess was a secondary one, and belonged to that group of suppurative effects often seen in various parts of the body in convalescence from typhus and typhoid fevers and various forms of blood poisoning.

# MINUTE ANATOMY OF THE LARYNX, NORMAL AND PATHOLOGICAL.

By CARL SEILER, M. D.

## III.

### THE VENTRICULAR BANDS.

AS we descend in our investigation, we come to the ventricular bands, which are generally described as folds of the mucous membrane extending in an antero-posterior direction across the cavity of the larynx. They are, however, not only mucous membrane, but their bulk consists of other structures as can readily be seen both in longitudinal and transverse sections. These projections, for bands, in the strict sense of the word, they are not, are attached to the perichondrium of the thyroid cartilage, at the angle formed by the junction of the two lateral plates, and are inserted on the anterior face of the arytenoid cartilages.

The mucous membrane descends from the ary-epiglottic folds until it reaches the edges of the ventricular bands, where it is reflected, running upward to line the ventricle. Both on the laryngeal and the ventricular surface we find the mucous membrane covered with ciliated epithelium, which extends down to the vocal cord. Between these columnar cells numerous ducts of glands are noticed, which here, as in the region of the ary-epiglottic folds, are remarkably large.

Immediately below the mucous membrane, on the laryngeal side, we find the submucous connective tissue, whose fibres are but loosely interwoven, and which in its meshes

accommodates numerous fat-cells. Intimately connected with this is the so-called "*membrana laryngealis elastica*," which in this region consists of two sets of fibres of yellow elastic tissue, the one running longitudinally (parallel to the long axis of the larynx) and the other transversely. Neither the longitudinal nor the transverse fibres unite anywhere to form a band, but are irregularly disposed and form large meshes in which we find the racemose glands. The longitudinal fibres are lost above in the submucous tissue of the ary-epiglottic folds and below in the vocal cord, while the transverse fibres arise from the perichondrium of the thyroid cartilage at the anterior angle, to be inserted into the perichondrium of the arytenoid cartilages. These fibres start from the thyroid cartilage in a bundle, but soon separate, one portion running into the ventricular band and the other into the space between the thyroid cartilage and the ventricle. In some of the lower animals these elastic fibres become cartilaginous, thus forming a partition of cartilage separating the glands from the mucous membrane, and being pierced by their excretory ducts.

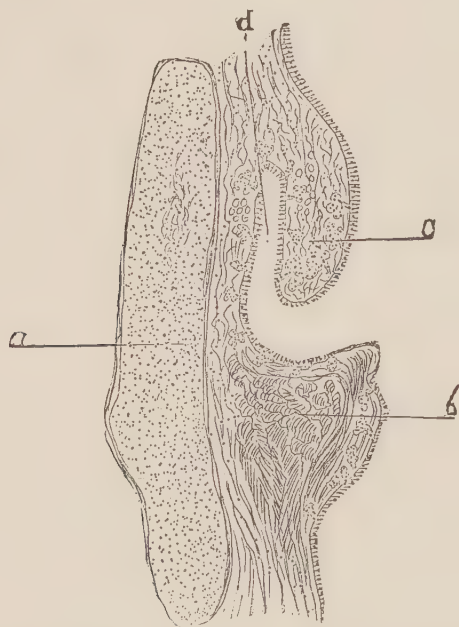


FIG. 4.—TRANSVERSE SECTION THROUGH VENTRICULAR BAND AND VOCAL CORD.  
*a.* thyroid cartilage ; *b.* vocal cord ; *c.* ventricular band ; *d.* ventricle.

Occasionally in man and frequently in the lower animals, muscular fibres are noticed in the ventricular band, running parallel with its edge, which belong to the thyreo-arytenoid muscle.

The glands are of the racemose variety, and are seen on the laryngeal side in large masses, while on the ventricular side the aggregations are very much smaller. Their ducts, as has already been mentioned, are large and straight, opening between the epithelial cells of the mucous membrane of the ventricle as well as of the laryngeal side of the ventricular band.

The thyroid cartilage at this level, as may be seen in Fig. 5, usually in man, shows great dissimilarity, both in

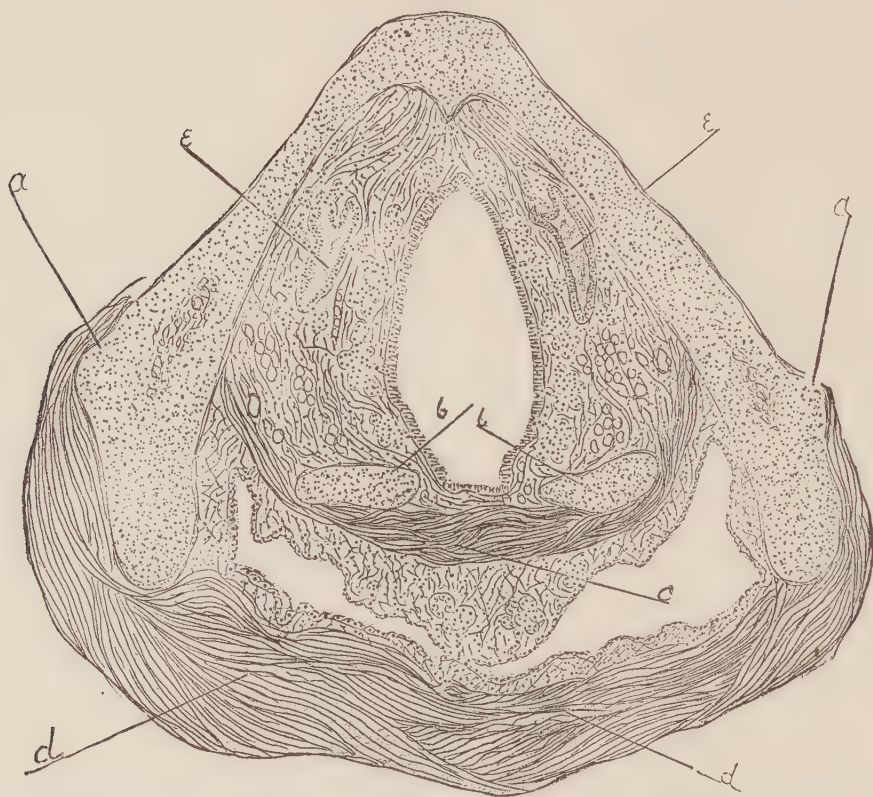


FIG. 5.—TRANSVERSE SECTION THROUGH LARYNX, ON LEVEL OF VENTRICULAR BANDS.

*aa.* thyroid cartilages; *bb.* arytenoid cartilages; *c.* arytenoid muscle; *dd.* muscular fibres of oesophagus; *ee.* tops of ventricles.

thickness and shape, between the two wings, and ossification generally appears first in this region. A thickening of the cartilage at the anterior angle is also noticed, together with a projection of cartilage into the interior of the larynx which, in the section, appears as a triangular plate. This is the upper extremity of a ridge to which the vocal cords are attached and which is sometimes called the "anterior vocal process."

As in the section made at the level of the ary-epiglottic

folds, so also here the œsophagus consists of unstriped muscular fibres covered with mucous membrane, which are inserted into the posterior part of the outer surface of the wings of the thyroid cartilage.

Between the arytenoid cartilages and inserted into their lateral faces, is seen a bundle of muscular fibres, some of which pass around the arytenoid cartilages, and are then inserted into the inner aspect of the wings of the thyroid cartilage. This bundle of fibres is the upper portion of the arytenoid muscle. Immediately overlying this we notice a considerable amount of loose connective tissue, containing in its meshes racemose glands, whose ducts open into the œsophagus.

The blood-vessels ramify through the submucous connective tissue and the elastic tissue, forming close capillary networks around the gland aggregations. In some of the lower animals, loops of capillary vessels are noticed in papillary projections of the mucous membrane, which are absent in man.

The same pathological changes as were mentioned in connection with the ary-epiglottic folds are seen also here, such as serous infiltrations, phthisical and syphilitic ulcerations, and various kinds of tumors. There is, however, one pathological condition peculiar to this region, and one which can not easily be explained by the normal relation of the histological elements. This is the so-called prolapse of the ventricle, which is a partial or complete loosening and falling down of the mucous membrane lining the cavity of the ventricle. As there are but very few cases of prolapse of the ventricle on record, nothing is known as to the anatomical relations or as to the cause of this accident.

In cases of pulmonary phthisis in which the pyriform swelling of the arytenoid cartilages had been seen in the laryngoscope, we find, on microscopical examination, that the tissue surrounding these cartilages and overlying the arytenoid muscle is filled with glands, the tubules and ducts of which are usually seen to be filled with tissue debris and dead epithelial cells. The spaces of tissue between the glands are filled with small granular cells of inflammatory origin.

## CLINICAL NOTES.

### ANCHYLOSIS OF THE CRICO-ARYTÆNOID ARTICULATION.

By GEORGE M. LEFFERTS, M.D.,  
NEW YORK.

CASE I.—Wm. A., æt. 42, consulted me as to his prospects for the restoration of normal voice. For three years he has spoken in a rough, hoarse whisper, subject to occasional relapses, and though treated at various times and by various practitioners, has experienced no benefit, the condition remaining persistently the same. Three years ago, he tells me, he suffered from a very bad sore throat; had always previously been well; comes of good strong stock; has himself no evidences of any tubercular taint, nor, according to his statement, history of syphilitic trouble. This sore throat, commencing with dysphagia, was rapidly followed by aphonia and some dyspnoea; deglutition finally became impossible, and a large hard swelling made its appearance externally over the left wing of the thyroid cartilage. No laryngoscopic examination was made. Internal remedies: he thinks potash, though taken for a time, had little or no effect, and the use of the sponge probang with nitrate of silver, which was heroically used, instead of relieving, only added to his difficulties. Mercurial inhalations, however, persistently carried out, worked at last a change, and the conditions here described began to improve, the external tumefaction being the last to disappear after the lapse of many weeks. His voice, as then, hoarse and rough, has since so remained. The laryngoscope shows all the evidences of a former active inflammatory condition, attended by an extensive ulceration which has at some time taken place over the left internal wall of the larynx, involving both soft parts and cartilages; the tissues over the ary-epiglottic fold, ventricular band, and specially over and about the ary-tænoid cartilage, are densely infiltrated by plastic material, and show signs of

true cicatricial tissue ; the appearances are those of a peculiar hardness and density, together with loss of normal anatomical configuration, the latter especially marked in the region of the ary-tænoid cartilage. The edge alone of the vocal cord, ragged and uneven as the result of former ulceration, is partially seen beneath the hypertrophied ventricular band which lies above it. All parts are immovable, thoroughly bound down, and rendered mechanically quiescent by the hyperplasia and cicatrices above described. On attempted phonation no movement of the left side of the larynx is perceptible ; the ary-tænoid cartilage and its corresponding cord make no effort at adduction, and the right vocal cord compensates for the defect by passing the median line and approximating the remains of its fellow during the act. Over the ventricular band are several more or less superficial and irregular ulcerations ; the general mucous membrane of both larynx and pharynx is catarrhal, but presents no further evidence, than that here described, of morbid action, either present or past. Externally there is nothing to show the former existence of the tumefaction, mentioned by the patient.

The patient was placed upon anti-syphilitic treatment (mercury and potash ; both were tolerated by the stomach), and daily spray applications of zinc chloride to the superficial laryngeal ulcerations. Within a week these had healed and the patient discharged, with directions to continue the use of the potash for some time longer, in diminishing doses, and to reconcile himself to the partial loss of voice, the conditions which gave rise to it being, to my mind at least, beyond relief.

*Remarks.*—The case was undoubtedly one of tertiary syphilitic ulceration of the larynx, associated with perichondritis of the thyroid cartilage, and in all probability of the ary-tænoid likewise ; the results of the arrested process remained, hyperplasia, cicatricial tissue and contraction, displacement and an immovable crico-ary-tænoid articulation with spurious paralysis of the corresponding vocal cord. The condition of the articulation is the one point that here claims attention. I do not question, but that the inflammatory process, reaching and invading the joint, destroyed it, giving rise, also, in the subsequent steps of nature's repair, to true ankylosis, with its attendant and necessary interference with physiological function ; that hypertrophy of tissue and cicatricial binding together of the parts added to its immovability is, moreover, probable.

CASE 2, A. Z., was brought to me by his family physician for examination and for the relief of a dysphagia, which had become very painful within the past few days, together with partial aphonia, upon which latter, it is true, the patient laid less stress, but which had persisted for some weeks. The patient, æt. 60, is and has been for years the victim of rheumatic or gouty arthritis; many of his joints are deformed, and he is subject to constant exacerbations of the disease. His general physique is poor; the laryngoscope showed, in an otherwise normal larynx, the existence of an active inflammatory process, attended by hyperæmia, tumefaction, and some œdematous swelling, to be localized over and about the right arytænoid cartilage. The anatomical outline of the latter is destroyed, and the swollen tissues not only so cover it that its precise identification is impossible, but offer a marked contrast to the opposite and normal-appearing arytænoid; the right ary-epiglottic fold is involved, but to a slight extent, in the swelling. In other words, the inflammatory process is distinctly localized; the right vocal cord lies near the median line of the larynx, not against its wall, and is normal in color and conformation. On attempted phonation, no movement of the right crico-arytænoid articulation takes place; there is neither effort at rotation nor adduction toward its fellow, and the right vocal cord, in its median position, makes no proper physiological movement. Movement upon the left side of the larynx is, on the contrary, exaggerated, and to a great extent compensatory.

*Remarks.*—Such being the physical condition, and the clinical history being as given, the diagnosis of acute gouty arthritis of the crico-arytænoid articulation is, I think, correct (or possibly an exacerbation of the same cause, antedating the present attack), with antecedent or commencing true ankylosis, and consequent immobility of the corresponding vocal cord. I use the terms antecedent or commencing because I am unable to determine from appearances alone whether the present attack in this particular joint is the first, or whether it has been preceded by others which have crippled it in the past. The patient has been partially aphonic for some time, just how long he cannot remember, but has never before complained of dysphagia, which, in the present instance, is evidently caused by the irritation in deglutition of the hyperæsthetic and tumefied soft parts about the inflamed articulation.

The subsequent history of this, to me very interesting, case is unknown. I had not again an opportunity of seeing it.

## CONCUSSION OF THE LARYNX—APHONIA.

By J. W. HOPPER, M. D.,

NEW YORK.

J. H., æt. 23, received a severe blow on the larynx, about the level of the crico-thyroid membrane, slightly to the left of the median line. The injury was occasioned by a fall, the injured organ striking against the projecting edge of a shelf. Moderate local tenderness and swelling followed immediately, with difficulty in phonation, this latter symptom becoming rapidly aggravated, so that twelve hours after the accident the patient was unable to speak above a whisper and then only with great effort. Subjective sensation was one of discomfort rather than pain, being merely a feeling of fulness in the affected region, and a constant inclination to swallow. No dyspnœa; very slight dysphagia; no expectoration, though an ever-present desire to clear the throat was felt. No laryngoscopic examination was made at the time of the accident. The above symptoms persisted with but slight modification for five or six days; at the expiration of this time gradual spontaneous improvement began. The voice, although husky and limited to the lower tones, returned, but the patient could appreciate an evident sluggishness in phonation, with a tendency to elision of certain syllables and repetition (unintentionally) of others, and an absolute inability to inflect, the voice keeping a certain monotone despite every effort. All difficulty in deglutition subsided within a fortnight. The voice has improved steadily since date of accident, so that at the present time (two months later) patient can talk quite easily in a fairly strong voice, although himself aware of a certain effort in phonation, and an impossibility of elevating the voice to the pitch readily attainable previous to the accident.

Laryngoscopic examination (two months after accident) shows that the muscular movement, both in adduction and abduction of the vocal cords, is normal, but tension imperfect; catarrhal laryngitis.

*Remarks.*—Dr. Beverly Robinson reports two cases of a similar injury, although of a more serious character.

CASE I (reported in the *N. Y. Medical Record*, May 1st, 1874) occurred in a male adult, æt. 60, who received a violent blow on the right side of the neck from a man's fist. Power of

articulate speech was immediately lost, though patient was able to produce a sound; blood-tinged sputum was expectorated after painful paroxysms of coughing. These symptoms lasted for four hours, after which time patient was able to talk in a hoarse whisper. Was unable to swallow for two days; ten days after accident could swallow semi-solid food, and twenty days after accident deglutition perfectly normal.

Marked dyspnœa, especially at night, lasted for several days after the accident; finally subsided, but a liability to a return existed when unusual effort was made. A laryngoscopic examination, made 23 days after the accident, showed that the left vocal cord was completely fixed; right vocal cord approximated well,—in fact, went beyond mesial line; both vocal cords were slightly congested; ventricular bands were considerably swollen, and the upper orifice of larynx narrowed; no deviation of epiglottis or arytenoid cartilages from their normal position; and an examination, some six weeks later, demonstrated that the laryngeal orifice was tolerably patulous; vocal cords very slightly congested; no swelling of consequence in any part of the organ; left vocal cord approximates, though in a very slight degree, the middle line in the effort of phonation.

The treatment proposed in this case was the internal administration of strychniæ sulphat., with local applications of Faradic electricity directly to the affected cord by means of Mackenzie's electrode. For a detailed account of the pathogeny in the above case, we would refer the reader to the very interesting remarks offered by Dr. Robinson (*Medical Record*, May 1, 1874, p. 232), merely stating that he considers the symptoms the result of contusion (with possible laceration) of certain nerve trunks in this vicinity, notably the recurrent laryngeal nerve and the pharyngeal plexus.

CASE 2 (reported by the same author in the *N. Y. Medical Record*, May 6, 1876) occurred in a male, æt. 43, who, in wheeling a barrow up an inclined plane, slipped and fell, striking his throat violently against the hind part of the barrow. Patient felt a sensation of cracking and considerable local pain. Expectorated bright-red blood for a few hours after the accident; 24 hours later spat muco-pus and blood. Considerable swelling externally, and a feeling as though choking from phlegm in the throat; dysphagia. Nearly complete aphonia for fifteen days after accident; it was several hours after the fall before aphonia

developed, dysphagia preceding it. All symptoms gradually abated, and four months after the accident patient could talk, but voice very hoarse and easily tired, and so faint in the morning as to be scarcely above a whisper. Throat dry, and a sensation of a lump in the throat. Endeavor to pitch the voice high produced a squeaky tone. Inability to modulate voice in conversation.

Examination of larynx with laryngoscope (four months after accident) "shows some thickening of the inter-arytenoid commissure; congestion of the vocal cords anteriorly; left ventricular band swollen; small superficial ulcerations along the free border of the epiglottis.

"In phonation, the glottis presents a decided oval in its ligamentous portion; the vocal processes and cartilaginous portion of glottis act normally."

Examination seven days later: "In phonation, the right vocal cord makes a more convex outline, considered exteriorly, than the left. The left cord leaves the median line more slowly than the right, while the patient inspires. Congestion persists; speaks with less difficulty; voice stronger; choking sensation not so intense."

*Treatment.*—Application of ferri perchlor. ( $3i - \frac{3}{4}i$ ) to the epiglottis and interior of the larynx.

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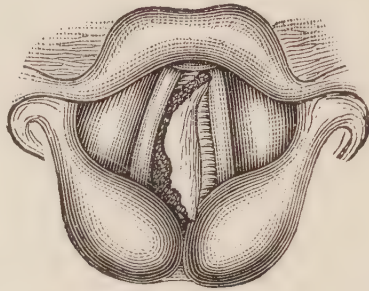
IMPACTION OF A LARGE PIECE OF BONE IN THE LARYNX  
AND TRACHEA. UNSUCCESSFUL ATTEMPTS AT RE-  
MOVAL THROUGH THE MOUTH. TRACHE-  
OTOMY. RECOVERY.

By THOMAS R. FRENCH, M.D.,  
BROOKLYN.

Bridget Q., aged thirty-five, a servant, suffering from loss of voice and difficulty in breathing, was sent to my office by Dr. C. T. Chase, late on the evening of October 14th. As I was out of town at the time, the patient returned home, and I did not reach her till an hour after midnight. I then found her suffering with dyspnœa, dysphagia, and aphonia. Speech and swallowing were attended with pain. She stated that while eating mutton soup early that evening, she suddenly felt a pain in the throat while swallowing, accompanied by difficulty in breathing and loss of voice.

On examining her with the laryngoscope, a piece of bone was seen occupying the entire length of the rima glottidis, and extending into the trachea for a considerable distance. This was afterward demonstrated to be 24 millimetres.

Fig. I is a sketch of the laryngoscopic picture as described above.



**Fig. 1.**

As the bone was in a good position to grasp with laryngeal forceps, and seemed to be caught in the rima glottidis, having forceps with me, I immediately made an attempt to remove it through the mouth.

With Türck's tube forceps, I was successful in getting a good hold of the bone at the first attempt, but I found it to be firmly impacted, and could not move it. Because of the extreme irritability of the pharynx, I was unable for an hour or more to again introduce the forceps into the larynx, and see at the same time. Then, and twice afterward, however, I succeeded in grasping the bone, and, although considerable force was used, it could not be dislodged.

Mackenzie's lateral forceps were used in several of the attempts, but were found to be too short to reach the bone. Türck's tube forceps were sufficiently strong to enable me to use all the force that I thought justifiable under the circumstances.

As the symptoms of the patient were growing urgent, and there was no further hope of removing the bone through the mouth, tracheotomy became imperative. Drs. F. W. Rockwell and John Merritt soon responded to my call, and as I was extremely fatigued, Dr. Rockwell kindly consented to open the trachea. Ether being given by Dr. Merritt, Dr. Rockwell made a long incision over the trachea, intending to open the tube high up, but the presence of an unusually large anterior jugular vein and the urgent symptoms of the patient, she being nearly asphyxiated, rendered it necessary for him to open it at the most accessible point, which was about the fifth or sixth ring.

The parts were held open with retractors till respiration had been fairly reëstablished, when the opening was prolonged upward to about the second ring. The edges still being held apart, Türck's tube forceps, bent to suit the purpose, were introduced, the bone grasped, and after considerable difficulty, dislodged and removed through the tracheal opening.

The bone was found to be an irregular parallelogram in shape, measuring 24 millimetres in its longest diameter, 15 millimetres in its shortest, and, in some portions, 5 millimetres in thickness.

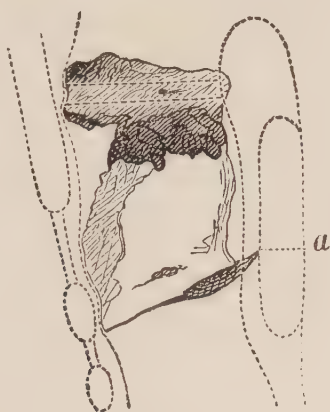


Fig. 2.

Fig. 2 represents the shape and size of the bone, and also the position it occupied in the larynx and trachea, the horizontal dotted lines indicating the vocal cords, and the perpendicular dotted lines, the walls of the larynx and trachea.

The reason of my failure to dislodge the bone with the forceps through the mouth was, for the most part, found to be due to a hook-like process at the lower posterior angle of the bone (a), which must have been deeply imbedded in the posterior wall of the trachea. The point of the process was very sharp and presented upward, and had great force been used in attempting to extract the bone through the mouth, serious injury to the mucous membrane of the trachea and larynx would certainly have been inflicted.

After the removal of the bone, a tracheotomy tube was introduced and left in till the fifth day, when the œdema and swelling having subsided, it was removed, and the edges of the wound brought together with plaster straps.

With the aid of the laryngoscope, lacerations could be seen in the intra-arytenoid fold and on the anterior wall of the trachea. These, however, healed kindly in a few days, and the patient has since done well.

## REMOVAL OF A BULLET FROM THE PYRIFORM SINUS.

BY B. TAUBER, M. D.,

CINCINNATI.

A man, æt. 38 years, complained of painful swallowing, shortness of breath, and hoarseness. His history showed that he was shot in the neck (on the left side) about twelve years ago; the painful dysphagia had existed ever since. On laryngoscopic examination I found the left sinus pyriformis entirely covered; the laryngeal sound was introduced to this point and met with a firm resistance, a hard body. With the laryngeal forceps I removed the ball there suspected. The ball was one-quarter of an inch in diameter, one-half of an inch long, and had a conical end. After the removal of the ball the patient swallowed with ease, and regained his voice in a few days.

## OCCLUSION OF THE LARYNX.

BY B. TAUBER, M. D.

A man, æt. 28 years, single, stated that for from two to three years he suffered a great deal from dyspnœa, aphonia, and painful deglutition. His family history is good; glands in the neck and under the maxilla not enlarged; no history of syphilis or phthisis. The laryngoscopic examination showed a *rara avis*. Telling the patient to phonate, a normal epiglottis could be seen, but not the interior of the larynx; instead, a pinkish-looking, smooth and flat band, measuring 8 lines in length, 6 lines in width, and  $\frac{3}{4}$  of a line in thickness, extended from the left to the right sinus pyriformis; the laryngeal aperture was concealed by this band, which covered the arytenoid cartilages, the cartilages of Santorini and Wrisbergiani, false, and true vocal cords of the other side. The attachment of this band on the right side was not as broad as on the left side, and ended in the shape of a funnel. On phonation I observed a vibration of this band coming from the right side, where it was open to the extent of three to four lines. Through this opening respiration went on. With the laryngeal knife I detached this band on both sides and all around, removed the residue with evulsion forceps, and applied afterward nitrate of silver in substance. The hemorrhage was slight. This procedure revealed a normal glottis.

After  $2\frac{1}{2}$  years I have again examined this larynx; it is in a normal condition, and the voice is distinct. On microscopic examination the band was found to be fibromatous.

# TRANSACTIONS OF SOCIETIES.

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## TRANSACTIONS \*

OF THE

SECOND ANNUAL MEETING

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION,

HELD IN THE CITY OF NEW YORK, MAY 31, AND JUNE 1 AND 2, 1880.

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Tuesday, June 1st, morning session.

The Association was called to order by the Chairman at 11 A.M.

### BUSINESS MEETING.

*Present*—Drs. Cohen, Bosworth, Knight, Seiler, Roe, Shurly, Robinson, Glasgow, Asch, Hartman, Lefferts, French, Rumbold, Lincoln.

The Secretary, Dr. George M. Lefferts, of New York, read the minutes of the business meeting of the last annual meeting of the Association. Approved.

The report of the Council was then read by the Secretary, as follows :

*Meetings of the Council, American Laryngological Association during  
the year 1879-80.*

Monday, May 31, 1880.

*Present*—Drs. Glasgow, Hartman, Lincoln, Shurly, Lefferts.

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\* For the first day's Transactions of the Second Annual Meeting of the American Laryngological Association, held in New York, May 31 and June 1 and 2, 1880, see ARCHIVES OF LARYNGOLOGY, Vol. i, No 4, p. 359.

Dr. Shurly in the chair.

The Clerk presented the following list of candidates for fellowship, together with the letters of their proposers and seconders, and the MSS. of their inaugural papers :

Dr. W. Gleitsman, of Asheville, N. C., proposed by Drs. Elsberg and Cohen. Paper on "A rare case of tracheal stenosis."

Dr. S. M. Langmaid, of Boston, proposed by Drs. Knight and Asch. Paper on "The treatment of certain forms of vocal disability by the application of the principles of voice culture."

Dr. E. W. Cushing, of Boston, proposed by Drs. Knight and Lefferts. Paper on "Membranous laryngitis complicating a case of typhoid fever."

Dr. Harrison Allen, of Philadelphia, proposed by Drs. Cohen and Seiler. Paper on "A new method of treating chronic nasal catarrh."

Dr. C. E. Bean, of Louisville, proposed by Drs. Cohen and Seiler. Paper on "Tuberculous laryngitis in its relation to phthisis pulmonalis."

Dr. C. E. Sajous, of Philadelphia, proposed by Drs. Cohen and Seiler. Paper on "The differential diagnosis between tuberculous and syphilitic laryngitis."

Dr. William H. Daly, Pittsburgh, Pa., proposed by Drs. Shurly and Rumbold. Paper on "Nasal polyps."

Dr. Wm. C. Jarvis, New York, proposed by Drs. Bosworth and Robinson. Paper on "Hypertrophy of the nasal mucous membrane."

The Clerk moved that said names be referred to the Association as eligible ones for fellowship. Seconded, and after some discussion over certain names on the list, carried, and the Clerk instructed to present said names to the Association.

The Clerk presented the names of Manuel Garcia and J. W. Richards as Honorary Fellows, in accordance with the resolutions offered by Drs. Cohen and Elsberg at the last annual meeting.

Upon motion, these names were likewise referred to the Association for their action.

The Clerk presented the name of Dr. Carlo Labus, of Milan, as Corresponding Fellow, in accordance with a resolution offered at the last annual meeting by Dr. Lefferts.

Dr. Bosworth proposed, by letter, the following names for corresponding fellowship :

Dr. David Foulis, Glasgow.

Prof. Paul Bruns, Tübingen.

Mr. W. Pugin Thornton, London.

Dr. W. MacNeill Whistler, London.

After some discussion, upon motion, the names were referred to the Association for action.

Letters of resignation were then read from Drs. Oliver, Ward, and Davis, and, upon motion, the two former were accepted and the Clerk instructed, in reference to the latter, to communicate with Dr. Davis.

The names of Drs. Delavan and Brandeis were presented by the Clerk, both of whom had made application for fellowship, properly endorsed, and had submitted inaugural papers, but at so late a date that no opportunity was afforded of printing their names upon the list of candidates sent to each Fellow, in accordance with par. 2, sec. iii of the Constitution.

Ordered that said names lie over for one year before action can be taken.

The Clerk called attention to the fact that the procurement of a proper design for a seal for the Association, and likewise a design for a diploma, had been referred to the Council.

He moved that they report progress and request an extension of time. Carried.

Likewise, the Clerk stated that the employment of a stenographer had been entrusted to the Council, and reported that he had secured the services of one at commercial rates.

Action endorsed.

There being no further business before the Council, on motion, adjournment.

GEORGE M. LEFFERTS,  
*Clerk.*

Wednesday, June 2d, 1880.

*Present.*—Drs. Hartman, Glasgow, Shurly, Lefferts.

The Clerk asked instructions as to his future course of action, as Secretary, in the case of gentlemen who, having notified him of having papers, for presentation at the annual meeting, in readiness, and the titles of the same having been published in the programme of the exercises as to be read in full, and a place assigned them in the order of the day, failed either to read or present them for reading when called upon by the Chair to do so.

Upon motion,

*Resolved*: That the future papers of such Fellows, unless good and valid reasons—satisfactory to the Council for past delinquency—were given, should be received with the understanding that they were to be placed among the volunteer papers to be read at the end of the session of the Congress, and that no definite place and hour can be assigned them.

Upon motion, adjournment.

GEORGE M. LEFFERTS,

*Clerk.*

After the reading of these minutes, Dr. Bosworth moved to amend the report by adding the name of Dr. Morell Mackenzie to the list of candidates for corresponding fellowship. This was objected to, and ruled out of order, as by the Constitution of the Association the names of the candidates for fellowship must first be considered by the Council. On motion, the report of the Council was then accepted.

Dr. LEFFERTS moved that the order of business be suspended, and that the Association proceed to the election of candidates. Carried.

The Chairman appointed Drs. Shurly and French as Tellers.

Dr. SEILER moved that the Secretary be authorized to cast the ballot of the Association for the gentlemen named as candidates.

Dr. KNIGHT objected upon the ground that each individual member should be allowed to vote yes or no.

The Secretary read the names of the following gentlemen to be voted upon by the Association for active fellowship :

Drs. W. Gleitsmann, of Asheville, N. C.; S. M. Langmaid, of Boston ; E. W. Cushing, of Boston ; Harrison Allen, of Philadelphia ; C. E. Bean, of Louisville ; C. E. Sajous, of Philadelphia ; Wm. H. Daly, of Pittsburgh, and William C. Jarvis, of New York. The regular order of business being resumed,

The Treasurer, Dr. George M. Lefferts, of New York, read his report, which showed a balance to the credit of the Association of \$118 60.

Receipts during the past year, \$158 50.

Expenditures, \$39 90.

Upon motion the report was accepted.

Dr. BEVERLY ROBINSON, Chairman of the Committee on Pub-

lication, made his report. He said the Committee had questioned whether it would be advisable to make a written report or a verbal statement of the work done ; they decided upon the latter. There had been certain occurrences which prevented the giving of the members of the Association the first volume of the transactions in book form. They had not been able to obtain the inaugural address of the President. They had had a great deal of difficulty in obtaining the papers of certain members of the Association. Certain members had declined to send their papers for publication in the official organ of the Association. One of the papers had only been received a few days ago. The question was, whether it would be well to have the first volume of the transactions appear ; whether the Association desires an incomplete volume to appear, as best it may, at present. As far as the Chairman was concerned, he would like to be discharged from his duties and have some one substituted in his place. It has been arranged that the members should send their papers to the Chairman of the Committee on Publication, and that he should read them over and forward them to the editor of the "Official Organ," thus guarding against the occurrence of errors that might have escaped the observation of the gentlemen who wrote the papers. This had not always been done and had led to some confusion. It was not very gratifying to the Committee to make the report which they were obliged to.

Dr. HARTMAN moved that the report be accepted, and that the Committee on Publication for 1879 continue in office for the purpose of finishing their duties, and that their duties be confined to the work now before them. Carried.

Dr. SHURLY reported, in behalf of the Tellers, that thirteen votes were cast, in every instance for the candidates, and that all were elected unanimously.

Dr. KNIGHT moved that the Chairman of the Committee on Publication be given full power to complete the first volume of the transactions according to his own discretion. Seconded.

Dr. ROBINSON was afraid that he would be unable to produce a creditable volume, owing to his probable inability to obtain certain papers or addresses. He inquired if it would be advisable to publish the transactions in a temporary book form ; that is to say, collect such papers as have been already printed and are about to be printed, and bind them together, for the purpose of getting some idea of the nature of the volume.

Dr. RUMBOLD said that plaster moulds had been taken of all the papers received, but they had not yet been stereotyped because they had not all passed through Dr. Robinson's hands. If the volume was not published, all this work would be lost.

The Chairman put the motion of Dr. Knight. Carried.

The Committee appointed to report upon the President's address of the last session, respectfully submitted that not having received printed copy or manuscript of the same they had been unable to perform the duties assigned them. Signed, J. Solis Cohen, Ephraim Cutter, F. I. Knight, Beverly Robinson.

Upon motion the report was accepted.

The Committee on Nomenclature respectfully reported that they had the matter entrusted to their care under consideration, and had, in a great measure, fulfilled their duties as represented in the manuscript presented herewith ; but they had been unable to convene in session sufficiently to complete such a finished report as the importance of the subject required. They therefore requested that their papers be recommitted and that they be continued for one year longer, and that two additional members be added, one residing in New York and one in Baltimore. Signed, J. Solis Cohen, F. I. Knight, Beverly Robinson, Ephraim Cutter.

Upon motion the report was adopted.

Dr. SHURLY moved that the Chair appoint the two additional members recommended in the report. Carried.

The Chairman appointed Dr. J. H. Hartman, of Baltimore, and Dr. Andrew H. Smith, of New York, as additional members to the Committee on Nomenclature.

The Librarian, Dr. Bosworth, reported that immediately following the annual meeting in 1879 he issued a circular very generally in this country and in Europe, calling attention to the formation of the library, and requesting contributions of books and pamphlets. In response, there have come into his hands, both from members of the Association and others, 9 bound volumes and 93 pamphlets.

The list is not a large one, but the material acquired is most of it of no small value.

He added that it is earnestly desired that the members may feel an interest in the project of forming this library, and that their contributions may be sent to the Librarian without especial solicitation.

Upon the motion of Dr. Rumbold the report of the Librarian was received and placed on file.

The Nominating Committee reported the following list of officers for the ensuing year :

President, Dr. J. Solis Cohen, of Philadelphia ; Vice-president, Dr. W. C. Glasgow, of St. Louis ; Permanent Sec. and Treas., Dr. Geo. M. Lefferts, of New York ; Member of Council, Dr. Andrew H. Smith, of New York.

They also recommended as the place of meeting for 1881, Philadelphia ; time, the Monday following the meeting of the American Medical Association. Signed, F. I. Knight, Chairman, E. L. Shurly, Beverly Robinson.

Dr. SEILER moved that those gentlemen who presented papers and whose names were not received in time for election, be declared members for this meeting. Lost.

The nominations for honorary fellowship, were next voted upon by the Association with the result that Manuel Garcia, of London, was elected.

Upon motion of Dr. Hartman the order of business was suspended, and the Association proceeded to the consideration of the proposed amendments of the Constitution.

1. Sec. iii, § 2.—After the words “to the Council,” insert “at least,” and after the words “balloted for at the ” insert “first session of the ensuing.”

Amendment carried.

2. Strike out in Sec. iii, the whole of § 4.

Amendment lost.

3. Sec. v, § 1.—Amend to read : “The officers of the Association shall be president, two vice-presidents, a secretary and treasurer, and a librarian.”

Amendment carried.

4. Introduce in Sec. v, a new § to be numbered 2, which will read as follows : “The secretary and librarian shall be permanent officers, holding office, from year to year, at the discretion of the Association.”

Amendment carried.

5. Sec. v, § 2.—After the words “take place by ballot on the ” introduce the word “last.”

Amendment carried.

6. Sec. vi. § 1.—After the words “by the Association at the ” insert the words “final session of the.”

Amendment carried.

7. Finally, Sec. vii, to be amended in the whole so as to read :  
"This Constitution may be amended by a three-quarter vote of all the Fellows present at an annual meeting, provided that previous notice of the proposed amendment has been given in writing, and it shall be the duty of the Secretary to insert the proposed amendment, in the notification of the approaching meeting."

Amendment carried.

The amendments to the Constitution were then adopted as a whole by the Association.

The Association then resuming the order of business proceeded to vote upon the nominations for corresponding fellowship.

Upon motion of Dr. Bosworth, the Secretary was instructed to cast the vote of the Association. There being no objection offered he did so, and Drs. Whistler and Thornton, of London, Foulis, of Glasgow, Bruns, of Tübingen, and Labus, of Milan, were duly declared elected.

The Chairman called upon the Nominating Committee for nominations for a second vice-president and librarian, and the following nominees were reported :

For second vice-president, Dr. J. O. Roe, of Rochester ; for librarian, Dr. F. H. Bosworth, of New York. Upon ballot both gentlemen were duly declared elected.

The Secretary, by request, read the following resolution concerning local laryngological societies :

"Any formally-organized local laryngological society in America or elsewhere shall be entitled to representation, by one or more delegates, at the annual meetings of the American Laryngological Association.

"One delegate shall be allowed for the first five members on the active roll of each society, and one additional delegate be allowed for each additional series of ten active members, or fraction thereof exceeding five.

"These delegates shall be considered as Associate Fellows for the year during which they represent their respective organizations ; and shall be entitled to participate in all the literary discussions occurring during the sessions to which they are respectively accredited.

"Local societies are requested to communicate annually to this Association any matters of inquiry, observation, or information, which, in their opinion, may be of general interest to the science of laryngology."

Dr. SHURLY objected to the passage of the resolution, as it afforded an opportunity for the generosity of the Association to be imposed upon.

Dr. GLASGOW agreed with Dr. Shurly.

Upon vote of the Association, the resolution was lost.

The Secretary, by request, read the following resolution :

*Whereas* : The members of the American Laryngological Association have received an invitation to attend the first International Laryngological Congress, to be held in Milan the first week in September, 1880, therefore be it

*Resolved* : That the President of the American Laryngological Association appoint three members as delegates to represent the Association in that Congress, and the Secretary be instructed to furnish said delegates with proper credentials.

The Chair appointed the following gentlemen as delegates to represent the Association : Drs. Louis Elsberg, of New York ; J. H. Hartman, of Baltimore ; Carl Seiler, of Philadelphia.

Dr. LEFFERTS moved that the transactions, the report of the business meeting, and all papers read before the Association, be published in the ARCHIVES OF LARYNGOLOGY, and that these ARCHIVES be made the official organ of the Association.

It would be the aim of the editorial staff to make the journal a representative one, and to extend its influence in all possible ways. The editors of these ARCHIVES made the following offer : That if the papers and discussions are printed in the journal they will furnish as many copies of the transactions in paper covers as the Association may require, at actual cost of paper and press-work alone.

Dr. RUMBOLD thought that the publication of articles in a special journal would not do the Association as much good as would be derived by publishing them in a general journal.

Dr. HARTMAN moved that the resolution declaring the *St. Louis Medical and Surgical Journal* the official organ of the Association be repealed.

Carried.

Dr. LEFFERTS' motion was put and carried.

Nominations for active fellowship in the Association were now called for, and six names were referred to the Council for their action.

There being no further business before the Association, the paper of Dr. Thomas F. Rumbold, of St. Louis, on the " Removal

of polypoid growths from the superior portion of the respiratory tract, with cases," was called for in its regular order, but not being forthcoming, Dr. Rumbold was permitted by the Chair to make some verbal statements upon the subject, and to exhibit an improved instrument.

(The Secretary has been unable to obtain from Dr. Rumbold the manuscript of his paper, and it therefore does not appear in the report of the transactions of the Association.)

June 1st, afternoon session.

The Association was called to order at 3 P. M. by Dr. Cohen, Chairman.

Dr. J. SOLIS COHEN, of Philadelphia, requested Dr. Knight to take the chair, while he read his paper upon "Primary tuberculosis of the larynx, with specimen and microscopic sections."

*As the wood-cuts illustrating Dr. Cohen's paper are not finished for this issue of the ARCHIVES, it is thought best to defer its publication, the remarks, etc.—ED.*

## REVIEWS AND BOOK NOTICES.

**A manual of diseases of the throat and nose, including the pharynx, larynx, trachea, œsophagus, nasal cavities and neck.** By MORELL MACKENZIE, M.D., London, Senior Physician to the Hospital for Diseases of the Throat and Chest, etc., etc. Vol. I. Diseases of the Pharynx, Larynx and Trachea. London: J. & A. Churchill, 1880. 8vo, pp. 601 and XI. *The Same.* Philadelphia: Presley Blakiston, 1012 Walnut Street, 1880. Large 8vo, pp. 570.

These ARCHIVES, Vol. I, No. 3, brought of this book a brief announcement by the editor-in-chief. The following is the further notice there promised.

Dr. Mackenzie's work is based partly upon lectures delivered during many successive years at the London Hospital Medical College, and partly upon a Jacksonian prize essay on "Diseases of the Larynx," of which he is the author. A large portion of the matter, however, is offered to the profession for the first time. Each one of the separate sections of the work is preceded by a chapter on the anatomy of the organ; by one on the method of its examination, and by one on the different instruments employed in the treatment of pathological conditions. This first volume is plentifully illustrated with 112 excellent wood-cuts, which show numerous instruments, the correct method of holding and using them, and a large variety of morbid appearances. A considerable number of these drawings are in reality original. Some there are which have been taken from his previous works; others are new and have been made especially for this volume. Whenever the author has borrowed the figure of an instrument or a method of procedure from another, we always find its true origin brought prominently to the reader's attention.

Under the title of examination of the pharynx, the author recommends the use of the handle of the laryngeal mirror in pref-

erence sometimes to that of the tongue spatula. The spatula described, and of which a drawing is given (Fig. 1), "resembles a long, tapering wooden penholder, cut flat at both ends, so as to present a larger and smaller surface for receiving the caustic paste." In speaking of tonsillotomes, he expresses his preference for "instruments made on the simple model of Physick."

In making use of the uvulatome it is advisable to hold it in an oblique direction.

Preceding the definition of each disease we find its synonyms mentioned, and the equivalents in the Latin, French, German and Italian languages. The author endeavors to assign to each disease its proper nosological place. In his descriptions of diphtheria, erysipelas of the throat, and the throat affections of typhoid and the eruptive fevers, he has judiciously set aside a too exclusive adherence to this plan. Relaxed throat, though concisely described, is complete and satisfactory. The section on granular pharyngitis, while excellently narrated, presents statements for criticism. Contrary to the author, we hold with the French, that the herpetic diathesis is a frequent cause of this affection, and also one that is less vague than it appears to him. The exudative form of follicular disease upon the posterior wall of the pharynx, in our experience, is rarely seen. Attention is directed to the extreme rarity of tonsillitis in children under five years of age, and in adults over fifty. Between the five varieties enumerated by Wagner, there is clinically no sufficient line of separation.

In deep tonsillitis the author relies mainly upon guaiacum given internally. At times the tendency of this affection is inevitably toward suppuration. In cases where the tonsillar masses obstruct the throat so completely as to threaten suffocation, and are not relieved by incisions, they should be immediately excised. In the event of excision failing to relieve the patient, tracheotomy should be performed. The description of large tonsils is everything we could desire, so full and correct is it in every particular. Two good figures illustrate this account. In regard to local treatment none is to be compared with applications of "London paste." If abscission be resorted to, the tonsillotome is preferred to the bistoury and forceps. Tonsillar hemorrhage can always be arrested by sipping the tanno-gallic acid gargle of the Throat Hospital pharmacopœia. Syphilitic erythema of the pharynx shows a decided tendency to limit itself after a day or two, "by abrupt and well-defined margins."

Tertiary syphilitic ulceration, which destroys the back of the palate, often leaves the anterior part of the mouth intact. The opinion of the author in regard to treatment is somewhat special, and should be transcribed in his own words: "Secondary syphilitic affections of the pharynx do not usually require any constitutional remedies. \* \* \* Under the use of local remedies the symptoms rapidly disappear, and I have rarely met with tertiary phenomena in the throat amongst those whom I previously treated for the earlier manifestations."

When the passages leading from the pharynx are contracted as a result of destructive ulceration, they should be kept open by the temperate use of bougies. The first symptom in phthisis of the pharynx is persistent soreness of the throat. When tubercle of the choroid is found in such cases, it is fair to conclude that general miliary tuberculosis is present. Traumatic pharyngitis, the anginae caused by poisonous drugs, wounds of the pharynx, foreign bodies in, and neuroses of this organ, are well described. Apropos of the treatment of foreign bodies the author writes: "The common but fatal practice is at once to use a probang, and to force the obstructing object onward. A foreign body comparatively harmless in the pharynx, is thus often driven into the larynx, or even into the bronchi, or may become impacted into the œsophagus."

We are more than pleased to find that the author sustains in such an exhaustive and to us unanswerable method, the identity of croup and diphtheria. He shows the relative immunity from it of persons who have passed thirty years, and in proof cites the Florentine epidemic of 1872 and 1873. In time of *epidemic* the hygienic condition of a particular locality is perhaps indifferent (Borgiotti). An elaborate system of drainage is frequently an additional danger to the affluent, as water-closets may convey poisonous sewage gas into their residences. In treatment primary importance is attributed to systematic feeding. Whenever exhaustion becomes manifest, large quantities of spirituous drinks are taken by the patient with manifest benefit. Amongst the purely medicinal remedies the following are most lauded: tincture of perchloride of iron, perles of copaiba (in catarrhal cases), and chlorate of potash. Locally, the application of caustics is strongly deprecated. Iron (astringent) and lactic acid (solvent) are sufficient.

Antiseptics, as a gargle or spray, have no restraining influence on the exudative process. A portable croup tent is described and

recommended. "The tent method" is much employed at the London Hospital for sick children. A fatal case of erysipelas of the larynx, in which tracheotomy was performed, is reported in full. The cases in which this disease extends from the cutaneous surface to the mucous membrane lining the pharynx, have a far graver prognosis than those instances in which the progression is in an inverse direction (Hippocrates; Cornil.).

In Section II of this work, diseases of the larynx are admirably described.

Preceding their detailed consideration, we have a complete chapter on the anatomy of the larynx and upon the laryngoscope and its accessory apparatus.

Amongst the laryngeal instruments which are comparatively new or modified from old forms, we direct attention to the author's modification of an American sponge-holder (p. 245), to Martindale's inhaler, Allen's ventilating croup kettle, the tube insufflator (fig. 39), Prof. Schrøtter's dilator, Dr. Whistler's cutting dilator, etc. In "laryngitis stridulosa," the attacks are believed to be due to the presence of mucus in the larynx, which has become hardened by the passage of air. The cause of husky voice in the beginning of acute catarrhal laryngitis is frequently an impairment of the innervation of the intrinsic muscles (Gerhardt, Ziemssen, Mackenzie). Hyperæmia of the laryngeal mucous membrane is not always evident after death, owing to the action of the elastic fibres, which press the blood from the capillaries. Almost every case of *typical œdematous laryngitis* may be traced to blood poisoning.

In over 200 cases of Bright's disease in which the larynges were examined, never in a single one has the author found the lesions of acute œdema.

In the local treatment of *chronic laryngitis*, the solution of chloride of zinc is preferred (30 grs.— $\frac{3}{4}$  j). Of spray inhalations, that of tannin is the best (1 to 5 grs.).

When pareses of the laryngeal muscles are present, electricity alone will at times effect a cure.

The author has had occasion to perform tracheotomy in cases of subglottic laryngitis less frequently in recent than in former years. This he attributes to his earlier recognition of the disease and his increased power to combat it successfully by remedial measures.

Much of what is written in the chapter on "non-malignant tu-

mors of the larynx " can be read in the author's work on "Growths in the Larynx," London, 1871. But here, as everywhere throughout this volume, the latest acquisitions to the literature of the subject are made to contribute to absolute thoroughness. Moreover, additional statements from the author enhance its value, as they are the outcome of a larger experience and a more matured judgment.

Statistics taken from Paul Bruns' late work are incorporated in the article on malignant tumors of the larynx (carcinomata and sarcomata).

The results of thyrotomy are "extremely unsatisfactory."

The author acknowledges his indebtedness to Dr. Foulis for the description of the operation of extirpation of the larynx. In suitable cases it should be attempted, if requested by the patient, and after he has been made familiar with it in all its bearings. A tabular statement, with their analysis, is given of all such operations up to the present time.

The author has recognized condylomata of the larynx quite frequently. In 118 patients suffering from the earlier symptoms of syphilis, 44 cases have been seen. This is in entire opposition to the statement of Isambert, who does not even credit their existence in the larynx. This wide discrepancy may be explained, in part, by their aspect, their fleeting character, and the time of year at which the observations were made.

It is evident that the author still entertains the opinion that miliary tubercle is not an infrequent lesion in the larynx, and according to a quoted statement from Heinze, it would seem that this excellent pathologist made 50 autopsies in 1876 of persons who had died of pulmonary phthisis, and "in 47 cases of these there was tubercular ulceration of the larynx or trachea." Such is certainly not similar to our experience, nor does it correspond with the experience of excellent microscopists in New York.

Whenever anæmia of the larynx is well marked, it should always induce the attendant physician to make a careful examination of the lungs, so frequently is this local aspect a forerunner of laryngeal phthisis.

Perichondritis of the larynx, as a primary disease, is rarely met with. In 45 autopsies where necrosis of one or other of the cartilages was found, laryngeal phthisis, syphilis, or cancer, were responsible for causing it most frequently.

Whenever the laryngeal passage remains contracted after the

inflammatory process has subsided, it may be dilated by mechanical means. Schroetter's method is fully described, and importance is properly attached to his recent device of "using pewter plugs, of various diameters, and about an inch and a-quarter in length, which, being introduced into the larynx are retained *in situ* by means of the tracheal canula."

Interesting sections are devoted to lupus and leprosy of the larynx; fractures and dislocations; wounds of and foreign bodies in this organ. The nervo-muscular and sensory affections of the larynx are fully and accurately described, and merit in themselves far more than a passing notice.

The greater disposition in bilateral laryngeal paralysis to implication of the abductor filaments than the adductor filaments, is hypothetically explained either by their superficiality, or by an increment of nerve-force, which comes to the adductors from the superior laryngeal nerve. It is well known the author has never favored particularly the use of the galvano-cautery in endolaryngeal operations. In this work he states (p. 507) that this method of extirpation appears to him especially indicated "in cases of small growths situated in the upper part of the trachea."

The right-angled canula of Durham, of which several figures are inserted, is described and commended. The only objections to its use are that mucus is apt to become attached to the joints of the inner tubes, and these may become corroded. The former drawback is unworthy of serious consideration; the latter renders it obligatory to examine the condition of the joints carefully before making use of the instrument. General anæsthesia should, as a rule, be avoided during the operation of tracheotomy in adults. If it be necessary to administer a general anæsthetic, chloroform is preferred to any other, as it causes less irritation of the laryngeal mucous membrane. The author is opposed to the use of the thermo-cautery in laryngo-tracheal operations, on the ground that it "merely introduces an unnecessary complication into the operation."

For the extraction of a foreign body after the windpipe is opened, and when it has become fixed in the trachea and is not at once expelled, the author's tube forceps answers the purpose better than the instrument invented by Gross. Amongst the formulæ for topical remedies, those which have been found of especial use by the author are printed in black (Egyptian) type.

This treatise terminates with a very complete index. The typography, paper and general appearance of the volume, are satisfactory.

To conclude, this is in every sense a most admirable work, reflecting lasting credit upon its distinguished author. He is always clear, concise, and methodical. He is likewise judicious in his personal views and in his estimate of what others have done. The labor which is so well attested in every page is truly surprising. All sources of information have been thoroughly sifted, and but little remains to be gleaned by other writers upon the topics treated of. Not only is the bibliographical research most praiseworthy in its extent ; it is equally so in its exactness. Few errors occur, and when they do, are relatively unimportant. To this record of what others have accomplished, are added the results of his own valuable experience. Everywhere we can discover what he individually has done ; what remedies and surgical methods he has tried, and what successes and reverses have crowned his endeavors. How much the author has advanced our knowledge of throat affections, those alone can properly estimate who have worked faithfully in the same field. His present work he calls a manual ; for us it is, in reality, a system of the subjects taught in its pages, and as such it will remain. To the author himself, it may well be a source of continued and increasing satisfaction.

[B. R.]

**A practical treatise on nasal catarrh.** By BEVERLY ROBINSON, A.M., M.D. (Paris), Lecturer on Clinical Medicine at the Bellevue Hospital Medical College, New York ; Physician to St. Luke's and Charity Hospitals, etc. 8vo, pp. 182, New York : William Wood & Co., 1880.

We are told by the author that he has, in the lengthy essay before us, endeavored to write a succinct account of his personal experience in matters concerning nasal catarrh, and of his convictions, based upon a practical observation of the disease, and the statement bespeaks at once attention for the book and predisposes in favor of the interest and importance of its pages. So much has been, and is to-day written, notably upon this very subject, that possesses no possible claim to any originality,—works made up by compilation, containing crude and unproven statements, false conclusions, and inefficient and empirical therapeutics, that it is refreshing to the jaded reviewer to unearth in his search, as he is

able to do in many chapters of the work under consideration, new ideas and fresh views, both candidly and not unfrequently forcibly expressed; ones bearing the impress of conviction, and evidently based upon personal and practical experience and knowledge; others, that while they are in many instances open to adverse criticism, frequently not in accordance with those of recognized authority, and in a few examples extreme, still at all times are such as to command respect and bespeak, from the very fairness of their propositions, respectful consideration.

A careful reading of Dr. Robinson's book has convinced us, then, that though lacking in many of the attributes which go to make up a successful work, it contains much that is of real merit, and not only merit—that were, perhaps, to damn it with faint praise—but matters of value and importance to all, and all, in this case, must necessarily embrace the profession at large, who, equally with the specialist, are called upon to treat the forms of disease included under the general title, nasal catarrh; and we willingly and cordially express our opinion, in addition, that notwithstanding some defects already alluded to—if defects they may properly be called—which literary and professional experience will remedy in the future, the book stands to-day as one of the best contributions to our knowledge of all excepting the therapeutics of the disease. Here, it is, unquestionably, taken as a whole, *the* best and most reliable guide that exists at present in literature.

Our notice is, from its enforced brevity, limited to general statement. Willingly would we, if space were at our command, enter into detail. Proof is not lacking in the pages before us in support of all that we have said that is open to the charge of adverse criticism. On the other hand, our judgment of its merits is the fruit of no hasty and superficial reading, nor the outcome of any immature consideration. The same time and attention that we have bestowed upon it will lead others, familiar with the medical literature of the day, to endorse our views and unite with us in recommending the essay of Dr. Robinson as readable and reliable.

[G. M. L.]

# QUARTERLY REPORT AND ABSTRACT OF LARYNGOLOGICAL LITERATURE.

By GEORGE M. LEFFERTS, M.D.

## I.—LARYNX\*.

9. FOURNIÉ. On the voice in the enunch. *All. Wiener Med. Zeitung*, No. 37, 1880.
11. FRITSCHÉ. On aphonia spastica. *Centralblatt für Med. Wisch.*, No. 36, 1880.
13. HEINZE. A rare form of laryngeal stenosis. *Wiener Med. Presse*, No. 44, 1880.
14. HERING. Laryngeal stenosis following perforation of a vocal cord. *Monatssch. für Ohrenheilk.*, No. 8, 1880.
16. INGALS. Treatment of diseases of the larynx. *Chicago Med. Jour. and Ex.*, October, 1880.
17. JELENFFY. The musculus vocalis and vocal register. *Centralblatt für Med. Wis.*, No. 39, 1880.
18. JONES. Fatty tumor of the larynx. *Lancet*, October 23, 1880.
19. KAPFF. On extirpation of the larynx. *Ann. des Mal. de l'Oreille et du Larynx*, September, 1880.
20. KRISHABER, M. On laryngeal spasm in locomotor ataxia. *Ann. des Mal. de l'Oreille et du Larynx*, November, 1880.
23. MACKENZIE. Congenital syphilis of the throat; based on a study of 150 cases. *Am. Jour. Med. Sci.*, October, 1880.
27. MOURE. Cysts of the epiglottis. *La France Méd.*, No. 87, 1880.
29. NAVRATIL. A contribution to the pathology and therapeutics of laryngeal papilloma. *Berlin. Klin. Wochensch.*, No. 42, 1880.
30. POORE. Cases of paralysis of the left recurrent laryngeal nerve. *Lancet*, October 23, 1880.
32. ROSSBACH. A new method of anæsthetizing the larynx. *Wiener Med. Presse*, No. 40, 1880.

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\* A part of the present report, containing the complete bibliography of the larynx for the quarter, will be found in *ARCHIVES*, No. 4, vol. i, 1880, p. 390.

34. SCHAEFFER. A new simple laryngoscope. *Deut. Med. Wochensch.*, No. 39, 1880.
35. SCHAEFFER. On phonetic paralysis. *Monatssch. für Ohrenheilk.*, No. 8, 1880.
36. SCHMIDT. On the treatment of laryngeal tuberculosis. *Wiener Med. Presse*, No. 37, 1880.
37. SCHNITZLER. On hemorrhage from, and laceration of, the vocal cords. *Wiener Med. Presse*, Nos. 38, 41, 1880.
38. SEMON, F. On the mechanical impairments of the functions of the crico-arytenoid articulation (especially true and false anchylosis and luxation), with some remarks on perichondritis of the laryngeal cartilages. *Med. Times and Gaz.*, September 18, *et seq.*, 1880.
42. WIEBER. Extirpation of the larynx. *Ann. Anat. and Surg. Soc.*, Brooklyn, N. Y., June, 1880.
43. ZUCKERKANDL, E. On certain variations in the regio glosso-epiglottica. *Monatssch. für Ohrenheilk.*, No. 10, 1880.

9. **The eunuch voice.** By this term is understood a voice with a much higher register than would properly appertain to the age, sex, and physical development of the given individual. It is not infrequent and usually consists in a voice the notes of which run one octave higher than is common. It must not be confounded with the soft, flute-like voice, two to three notes higher than the usual register, which is occasionally found in the "tenorini," and proceeds from a well-proportioned, but small larynx, resembling that of the female. The larynx pertaining to the eunuch voice, presents, as a rule, in its external configuration, nothing abnormal; it is proportionate to the age and stature of the man, and the laryngoscope reveals no change from the usual picture, as far as anatomical conditions go. Allow the patient, however, to intone, when the mirror is in position in the fauces, and it will at once be seen, that though at the moment of intonation the vocal cords approach each other, leaving for the air current only a small elliptical space between them, they finally press closely one against the other; but that this contact only takes place anteriorly, and that posteriorly a V-shaped space is left, its point looking forward. At the same moment the cords are strongly tensed in an anterior-posterior direction, and the larynx drawn upward and backward. If the attempt be now made to produce still higher tones, the conditions either remain the same, or the tension of the cords is slightly increased, and the glottic opening, posteriorly, a little narrowed. The excessive tension of the vocal cords is evidently, then, mainly at fault, but this fact will not explain why the register is an octave higher than common in an otherwise natural voice. The reason will, however, be found in the pathogenesis. The histories of all patients show that their peculiar voice dates from the period of its mutation. The majority remember that it at this epoch was much changed; that they remained, for a variable period, aphonic, and that, upon regaining the voice, its timbre and register were altered to that of the so-called eunuch voice. This period of mutation we know is characterized by the rapid growth and development of all the parts concerned in vocalization. If this growth does not proceed harmoniously,—that is to say,

if certain parts develop more rapidly, others slowly, the lack of correspondence, of growth-harmony, is quickly shown in the configuration of the rima glottidis, which assumes the V shape, so well exemplified in the case of an eunuch voice; the laryngeal cavity, too quickly and excessively developed, the crico-arytenoid lateralis and the thyro-arytenoid muscles are too weak to close the vocal cords together posteriorly. Under such conditions, a boy can produce no chest note, and endeavors to compensate for the difficulty in closing the glottic opening by excessive spanning of the vocal cords. The treatment of the condition consists in a given gymnastic exercise for the organs of voice, the method and manner of which are fully detailed in the original paper. It may be thus summarized: Deep methodical inspirations, phonetic expirations, the given note to be produced without perceptible contraction in the larynx and expired in the manner of a sigh; these having been acquired, certain syllables are spoken during the act, in the same manner, then words, and finally reading from a book; the patient, therefore, does not speak during this whole time in his familiar eunuch voice, but always in a syllabic, deep, sonorous tone during expiration.

As a rule, fifteen to twenty days of this gymnastic procedure are enough to change the character of the voice in the affected individual. Fournié has tried the method in thirteen cases with the best results. (See also, Proceedings, International Congress, ARCHIVES No. 4, vol. i, 1880, p. 378.)

**11. Aphonia spastica.** Fritsche communicates the histories of six cases of this affection in which the therapeutical result is worthy of record. In five cases the use of the galvanic current was attended with success, the applications being made either externally over the throat, internally to the laryngeal cavity, or centrally over the cervical vertebræ. In four cases the faradaic current, persistently applied for weeks, was without result. Good results also followed the insufflation of powders of iodide of potash. Finally, Fritsche describes a new form of laryngeal electrode, in which, by an arrangement of the handle, electrodes of different forms and direction may be used.

**13. Rare form of laryngeal stenosis.** Caused by the cicatricial union of the epiglottis with the posterior pharyngeal wall, after syphilitic ulceration of the parts. The use of the galvano-cautery in separating the attachments was followed by such a profuse hemorrhage that ligation of one external carotid became necessary. (See also, Proceedings, International Congress, ARCHIVES No. 4, vol i, 1880, p. 379.)

**14. Perforation of a vocal cord, laryngeal stenosis.** \* \* \* For two years, cough, hoarseness and dyspnoea, purulent expectoration without blood, stridulous breathing, painful deglutition, and aphonia. The mucous membrane of the ventricular bands hypertrophied and reddened; the left vocal cord immovable; the right, after removal of some pus, showed a perforating ulcer 6 mm. long and 1 mm. broad. In five days of mercurial treatment, marked improvement.

**16. Treatment of diseases of the larynx.** In his lecture, Ingals deals with the treatment of inflammations of the laryngeal mucous membrane. His advice is evidently intended for the general practitioner and not for the specialist. Some of the most important affections are passed over with superficial consideration, and some of the counsel given and statements made, in connection with the commoner diseases, are open to fair criticism.

17. **The musculus vocalis and voice registers.** Jelenffy believes that this muscle never participates directly in the vibrations of the vocal cords, and that the vibration of the edges alone of the latter, produce sound waves. Regarding its function he has arrived at the following conclusions: 1. The thyroid cartilage being fixed, the vocal muscle draws the arytenoid cartilages to a median position. 2. When the latter are fixed, it draws the thyroid backward and shortens the vocal cords. 3. During the production of vocal sounds it acts as an obturator to the air pressure in all the registers. 4. If the muscles be tensed precisely in an antero-posterior direction, the vocal cords are closely approximated, and the glottis completely closed; through this procedure can chest tones only be produced. 5. When the muscles act alone as an obturator to the air pressure and are not precisely tensed in the median line, the glottis has an elliptic shape, and is not closed, only narrowed. Falsetto tones alone are produced by this mechanical movement. 6. In the different positions and shape of the glottic opening lies the cause of the difference between the chest and falsetto voice.

18. **Fatty tumor of larynx.** Jones exhibited at the London Pathological Society recently, a tumor of this class as large as a Tangerine orange, with a pedunculated attachment to the right aryteno-epiglottic fold. It was met with in a man 40 years of age; on opening his mouth nothing abnormal was seen, but when he gave a peculiar gulp, the tumor was brought up and lay on the dorsum of the tongue. It was removed by freely dividing the mucous membrane of the pedicle and turning it out. A small cyst lined by stratified scaly epithelium was found in it.

19. **Extirpation of the larynx.** The article here alluded to is a review, by Baumfeld, of the inaugural thesis of Kapff. The latter is a *résumé* of the present literature of the subject, containing no original observation.

20. **Laryngeal spasm in locomotor ataxia.** Krishaber's article is an excellent one, and will be of much interest to those who have followed the recent discussion of the points involved in the above heading. Its length precludes our giving it a fair abstract in the present report. (See also, Proceedings, International Congress, ARCHIVES No. 4, vol. i, 1880, p. 386.)

23. **Congenital syphilis of the throat.** At the outset of his valuable and interesting paper, Mackenzie asserts that laryngeal disease is not rare in congenital syphilis; on the contrary, that it is one of the most constant and characteristic of its pathological phenomena, and that the invasion of the larynx may be looked for with as much confidence in the congenital as in the acquired form of the disease. The reason why the lesions have not been found more frequently lies simply in the fact that they have not been sought. The aim of the paper is, then, to invite attention to the throat as a frequent seat of the lesions of congenital syphilis, and its author's faithful description of the mode of occurrence, natural history, and characters of the disease, is the outcome of a careful analytical study of some 150 cases of throat syphilis of congenital origin. To these cases, personally observed, have been added all cases available in the scattered literature of the subject. The result, as embodied in the subsequent pages of his paper, is, as we have said, a valuable one. After a description of the superficial form of pharyngitis and its complications, we are

told that deep ulceration, a form usually considered, in text books at least, as very rare in congenital syphilis, may invade the bucco-pharyngeal cavities at any period of life, from the first week up to the age of puberty. Out of 30 cases analyzed with reference to the period of invasion, 14 occurred within the first year, a proportion of nearly  $\frac{1}{2}$ , and of these, 10 within the first 6 months. Of the remaining cases, the majority occurred at a period more or less advanced toward puberty. The ulceration may occur in any situation, but its favorite seat is the palate, and especially the hard palate. When it occurs upon the posterior aspect of the latter, the tendency is to involve the soft palate and velum, and thence to invade the naso-pharynx and posterior nares. Seated anteriorly, it seeks a more direct pathway to the nose. The next most common localities are, in order of frequency, the fauces, naso-pharynx, the posterior pharyngeal wall, the nasal fossæ, the septum nasi, the tongue, and finally the gums. A peculiarity in these ulcerations is their centrality of position, and, furthermore, their special tendency to attack the bone and eventuate in caries and necrosis. The ravages of the disease present the typical appearances that are found in the tertiary syphilis of the adult.

Although the constant irritation to which the œsophagus is subjected by the gravitation of purulent secretion from the nose, and its carriage thither by the movement of deglutition, determines a condition of chronic congestion and hypersecretion of its follicles, well pronounced lesions of this organ are very rare. Nature seems to afford a certain amount of conservative protection which guards it against the more destructive forms of syphilis.

On the other hand, the laryngeal lesions of congenital syphilis are constant and characteristic, and play an important rôle in the pathological evolution of the disease. The larynx may be involved at any, but usually at an early period. Monti states that he has twice seen laryngeal syphilis which arose during intra-uterine life. The most common period of invasion, however, is the first six months after birth. Out of 76 cases of laryngitis, 53 occurred within the first year, and of these, 43 within the first six months, 17 within the first month, and 4 within the first week of life. Age, therefore, exercises a predisposing influence upon the eruption of the disease in the larynx. This applies not only to the superficial changes, but also to those malignant forms of laryngeal destruction, which the pathologist occasionally encounters. Two principal varieties of laryngeal inflammation may be distinguished in congenital syphilis. The classification of the lesions into secondary and tertiary do not here obtain as in the case of acquired disease. In the one, the changes are limited to the mucous membrane and sub-mucosa. Its processes are essentially chronic, and there is little tendency to invasion of the deeper structures. The other is characterized by deep ulceration of an extremely acute nature which, specially in early life, rapidly involves the cartilages and their envelopes and constitutes the most frightful form of the disease. In addition to these there is a third form, in which a gradual deposit of dense fibrous material takes place within the tissues of the larynx and leads to contraction of its lumen.

These pathological facts justify a classification based upon the anatomical seat of inflammation. Their separation, accordingly, into superficial, deep and interstitial, would be much less arbitrary, Mackenzie believes, and would avoid the confusion which the terms secondary and tertiary involve.

Chronic superficial laryngitis is the condition most frequently met with. It is limited to the mucous membrane and sub-mucosa; is essentially chronic, runs a definite course, gives rise to well-defined changes in the larynx, and may be divided into three stages, viz. : hyperæmia, infiltration and hypertrophy, and, finally, ulceration.

The deep, destructive ulcerative laryngitis corresponds, in physical characters, pretty closely to the tertiary inflammation of acquired syphilis. It may follow the superficial form, but generally occurs independently of it. It is sometimes among the first symptoms of infection, and here is most destructive. As a rule, deep pharyngeal ulceration precedes or coexists with this form of laryngitis, but deep ulceration of the larynx occurs too, without the slightest evidence of preëxisting pharyngeal lesions. Laryngeal ulceration does not commonly follow the pharyngeal destruction of latent syphilis. Those palato-pharyngeal ulcerations which are found in tardy congenital syphilis have little tendency to invade the larynx. Their future theatre of action is the naso-pharynx and nose.

Chronic interstitial laryngitis is intermediate between the two inflammations already described, and is rarer than either, but is of considerable practical importance in view of its insidious tendency to stenosis.

The trachea is the seat, though much less frequently, of the two forms of syphilitic inflammation just described as occurring in the larynx. Apart from superficial changes, well-pronounced tracheitis and deep ulceration are probably rare. The condition most commonly found is congestion.

Turning now to the question of prognosis, and in so doing, passing over the questions of symptomatology and diagnosis, which are fully treated of in the original paper, we find that it will be greatly influenced by the age of the patient. The earlier the throat is attacked, the more serious the results. Pharyngo-laryngeal ulceration occurring within the first year, is almost invariably fatal. Deep ulceration of the larynx, in view of its destructive tendency, offers a grave prognosis at any period. Pharyngeal ulceration, however, appearing late, or as a manifestation of tardy syphilis, yields gracefully to iodide of potassium. The prognosis in chronic superficial laryngitis is more favorable as regards life, though the tendency to laryngeal œdema and spasm should not be lost sight of. This form of laryngeal syphilis is exceedingly persistent and intolerant of treatment. It is often the *primum vivens* and the *ultimum moriens* of the disease. As Vidus Vidius said of syphilis : "It makes many truces but never peace."

In acute laryngeal syphilis the treatment should consist in mercurial inunction over the thyroid cartilage, the inhalation of calomel or iodate of zinc in the form of vapor, and the internal administration of potassium iodide. The aggregate daily dose of the latter should be large and should be pushed rapidly to the verge of iodism. Should the inflammation not yield within 24 hours to 48 hours, or should it show a disposition to advance, Mackenzie believes it to be the duty of the surgeon to open the trachea.

In the more chronic forms, mercury in tonic doses, combined with iodide of potash, should be exhibited, the local treatment consisting in the use of stimulating pigments and inhalations. As a topical application to the pharyngeal ulcerations, great reliance may be placed upon iodoform or the vapor of iodate of zinc.

27. **Cysts of the epiglottis.** Moure's article is a valuable one, and will be again alluded to in a future "Report." In the present instance, want of space precludes its notice. A good *résumé* will be found in the *Gaz. des Hôpitaux*, No. 125, 1880, to which, for the present, we refer our readers.

29. **Pathology and therapeutics of laryngeal papilloma.** In a case of papilloma of the larynx, which Navratil treated by preliminary tracheotomy, and three months later by thyrotomy and removal of the growth, a recurrence of the latter took place after ten weeks, the growth being seen through the fenestrum of the outer tracheal canula when the inner was removed. It occupied but a small part of the laryngeal cavity, and was treated as follows: A curved probe with a platinum cup on its top was charged with silver nitrate, passed through the canula and its fenestrum upward into the larynx, and the growth cauterized. Frequent repetition of this manœuvre caused its disappearance, and Navratil believes that in similar cases it is preferable to abstain from thyrotomy, and employ either this form of *porte caustique* or the forceps of Mathieu, in the manner described. It will rarely, he admits, ensure complete removal of the growth, but its extension into the canula through the fenestrum, and obturation of the tube, can be thus avoided, and time gained in which to wait for the development of the child and more room in the larynx, to permit of a thorough extirpation of the neoplasm by natural passages.

30. **Paralysis of the left vocal cord.** Poore reports three interesting cases of this lesion, with the following causes: In the first, aneurism of the third part of the arch of the aorta, exerting pressure upon the left recurrent laryngeal nerve. In the second, pressure upon recurrent laryngeal nerves and upon œsophagus, due, probably to a malignant tumor; and in the last, thickening of the left pleura, implicating the recurrent at its origin.

32. **Anæsthetizing the larynx.** Rossbach's method is to inject, hypodermically, 6 milligrammes of morphine on either side of the larynx at the point of entrance of the superior laryngeal nerve. (See also, Proceedings, International Congress, ARCHIVES No. 4, vol. i, 1880, p. 383.)

34. **A new laryngoscope.** Schaeffer has taxed his ingenuity to produce a simple instrument which will be transportable and non-breakable, and one that can be used with any or all sources of light. It consists of two cylinders of metal, an inner and an outer, the latter precisely like Mackenzie's well-known cylinder with a plano-convex lens. The inner, perforated by an oblong opening upon its side, is so arranged at its base by means of a graded ring easily introduced and fastened in its bottom, that it will fit over the glass chimney of any ordinary lamp. This cylinder is placed over the chimney, the second cylinder slid over it, so that the lens in its side corresponds to the perforation in the inner cylinder and also to the centre of the illuminating flame, and the apparatus is ready for use. (See also, Proceedings, International Congress, ARCHIVES No. 4, vol. i, 1880, p. 376.)

35. **Phonetic paralysis.** The patient, æt. 20, spoke in a low tone, and with effort to produce "g," monotonous, with a nasal quality. His voice often failed entirely. Then again, specially, if forced, a deep note alone was produced; attempts to intone the note "g" as "ae" resulted in noises similar to those pro-

duced by a sheep. The muscles of the face were undisturbed during speech, and the lips were only slightly opened. The condition here described had lasted since the "change of voice" took place some six years earlier.

*Examination.*—Chronic nasal catarrh; relaxed velum; mild chronic laryngitis; the vocal cords thinner than normal, and grayish in color. During intonation both flatten without regular vibrations, and leave a decided and hollowed space between them. During the production of a deep tone the false cords do not close over the true. No tension whatever of the true cords during phonation; on the contrary, the impresson is made as if they were tossed to-and-fro by the respiratory current. The cricoid cartilage does not move forward to the thyroid cartilage, and the arytenoids scarcely approach one another.

During quiet respiration the vocal cords are separated during inspiration, and tremble less, but still are not widely abducted.

*Diagnosis.*—Paralysis of the mm. thyreo-arytænoidei interni, crico-thyroidei, inter-arytænoideus, and crico-arytænoidei laterales; but, likewise a paresis of the muscles of the naso-pharynx, pharynx and face, concerned in articulation.

*Treatment.*—Pencillings of the mucous membrane of nose, pharynx and larynx, with nitrate of silver and tannin and glycerine; the galvano-cautery for the nose; insufflations; and the induced current, upon the use of which he lays special stress, and which was employed externally twice daily for one-half hour over the thyroid cartilage. (Schaeffer states that he has obtained just as good results with the external or percutaneous use of the induced current, as with the endolaryngeal; the latter can be tolerated but a short time, and by many patients not at all.) During the use of the electric current, the patient was ordered to sing certain notes, following the piano. Under this method in four weeks he had gained over fourteen notes and could hold them for a length of time; the vocal cords closed normally; the voice became ringing and lost its nasal timbre. In five weeks he was discharged with good voice and speech. Schaeffer explains the phenomena in this interesting case thus: The paralysis was directly chargeable to a disturbance of function of the nerv. laryng. superior, recurrens, and accessorius, involving likewise, through their rich anastomoses (Luschka), the nerves supplying the muscles of the pharynx, nose, and face. In spite of this fact, he prefers to use the term phonetic paralysis, as expressing that the entire muscular apparatus requisite for the production of voice as well as speech was involved. The cause lay apparently in the prolonged period of mutation of the voice; at least, he has seen the same conditions, though not to the same extent, produced in a case where the period of voice-change extended over two years.

36. **The treatment of laryngeal tuberculosis.** Schmidt's plan is two-fold—medical and surgical. The first presents nothing new; the latter is simply astounding. The principle of the medical treatment is based on disinfection. Of the first importance is it, he tells us, to disinfect the wound surfaces, and thereby cause them to heal. Moreover, by this same means, to prevent the inhalation of deleterious substances into the lungs, and perhaps to exercise a favorable influence, through the inhalation of medicated, disinfectant steam or spray, upon the morbid process existing in the latter. He adds that he has never known it to do anything specially remarkable, but that at least it does no harm. For the purposes of inhalation he uses carbolic acid and Peruvian balsam, more lately creosote-glycerine. The patient inhales the steam of hot chamomile

water, thus medicated, from an ordinary vessel, through a paper funnel. If there be much cough a little chloroform is added. As a rule, with a pale mucous membrane, chamomile water with carbolic acid is used; when it is congested, the same water in greater quantity, with balsam of Peru. This method he finds preferable, cheaper, and more convenient than the use of the spray apparatus, though the latter is occasionally employed. Dysphagia yields rapidly to the inhalations, he tells us, with or without decrease of the infiltration. The superficial flat ulcers heal in a few weeks; but deep ulceration is always slow in taking on reparative action. In swelling of the epiglottis, these means have failed; but perhaps bathing the parts with creosote-glycerine (1 part to 40 alcohol and 60 glycerine) will yield better results. Pelan and Borden have recommended it so highly that further trial must be made; the use of brushes, sponges and the like, are condemned; the inflamed parts must not be touched nor mechanically irritated.

Schmidt now admits very frankly that the above treatment will often fail in reducing the infiltration or in causing cicatrization of the ulcerations. If the former is marked, and specially if the epiglottis is involved, it will not answer, and extensive scarification must be employed. This is done by means of a scissors-like instrument, whose branches close like those of a guillotine; the one for the left ary-epiglottic fold has, near its ends, a short curve toward the right, in order that the fold may be cut at a right angle; the points of the blades are rounded to facilitate introduction. With these scissors large incisions can be made, and when, following them, the infiltration does not entirely disappear, they must be repeated a second or even third time. The method of doing this is as follows: The scissors, under guidance in the laryngoscopic mirror, are introduced closed over the epiglottis, then opened and the blades pressed downward, one lying in the larynx, the other in the œsophagus. The cut is now quickly made directly through the interlying thickest part of the infiltrated posterior laryngeal wall. The part most infiltrated is always sought for, but is sometimes difficult to cut through accurately, on account of the laryngeal irritability of the patient.

Much depends upon the extent of the incision, more than does upon its exact position. If it be possible, the incision is made to include in its course any ulceration of the posterior wall; as a rule, however, they lie too far inferiorly. But little pain and bleeding follow the operation; in a short time the swelling subsides and the infiltration commences to disappear, and in a few days the incision has healed. Resorption either still continues, or a second operation is later performed; this is the usual course when dealing with the posterior laryngeal wall. With an infiltrated epiglottis the course is different; deep incisions or entire sections of the cartilage are not possible with the scissors, and the incisions are painful and much slower in healing. Schmidt, therefore, scarifies its laryngeal face thoroughly with a special knife; this is carried down to the cushion of the epiglottis, and the incision powerfully made through the epiglottis in its entire length as the knife is withdrawn. If the infiltration is lateral, the incision here described is made over the affected half. If it involves the whole organ, the cut is made in the median line, and after a variable interval, one or two lateral ones. It should be made thoroughly, and at an early date, specially if the infiltration does not yield to the inhalations quickly, or when dysphagia is marked. The results are good.

The author expresses the wish, a wish that we certainly cannot reëcho, that the instrument which he describes may be so perfected that it may be safely placed in the hands of the general profession in order that they may, without the exercise of any special training, be enabled to perform the operation for themselves. At present, with the means at hand, it requires a certain amount of skill to incise at the right place and deeply, and, therefore, will probably remain in the hands of the specialist.

The ideas expressed in this paper as to surgical treatment are certainly new, and without question very bold, but that such heroic measures will meet with general acceptance, is not to be expected. Even the author himself, toward the end of his essay tells us, that as this method does not always succeed in causing the desired cure, palliative means are needed for certain cases, to relieve or lessen the sufferings of the poor patient. The well-known list then follows: Morphine, bromide of potash, laudanum, astringents, cauterizations, and the like. The same old, well-worn story,—measures often not even palliative, seldom, if ever, curative. (See also, Proceedings, International Congress, ARCHIVES No. 4, vol. i, 1880, p. 376.

**37. Hemorrhage into a vocal cord.** A patient who had been under treatment in Schnitzler's clinic for a simple catarrh of the pharynx and larynx, suddenly, after prolonged strain of the voice on attempting to call aloud, lost it entirely, and experienced pain in the larynx. In a few moments the voice returned, but weak and hoarse, the laryngoscope showed that the left vocal cord in its entire length and breadth was infiltrated with blood. It appeared thicker and denser, more like a rounded cord than a broad band, and in phonation and respiration was driven to and fro like a relaxed thread by the air current. A marked difference in phonation between the coarse vibrations of the reddened, thickened, and trembling left vocal cord, and the fine ones of the white, thin and well-tensed right, was very perceptible. The occurrence of the lesion is thus explained. The strain of vocal exercise increased the congestion of the vessels of the vocal cords, already hyperæmic on account of the catarrhal condition which had long existed. At the moment of increased vocal strain, as above narrated, the vessels of the left cord were torn, and the hemorrhage followed. Aside from the small punctate ecchymoses of the vocal cords, so common in laryngeal catarrh, hemorrhage into a vocal cord is exceedingly rare, but few cases are upon record. Schnitzler has seen but ten, and all of these were not true cases of extensive extravasation. The cause always lies in the strain of the voice. Small extravasations in the vocal cords, or mucous membrane of larynx or trachea, are not unfrequently seen as a result of violent cough. Schnitzler gives in his article the interesting histories of two cases of loss of voice in singers, due to the above cause, and insists upon its importance and liability to recur in the same patient. He uses in treatment inhalations of alum and tannin, later, insufflations of acetate of lead and nitrate of silver.

Hemorrhage from or into the vocal cord must not be confounded, as it is by many authors, with laceration. The latter includes not only rupture of the vessels, but a solution of continuity in the tissues of the vocal cord itself, throughout its entire length. Such cases are very rare; Schnitzler knows of but one, published by himself some years since. (*Wiener Med. Presse*, 1874.)

The present article is based upon the history of this very interesting example, which is again fully detailed, and an account given of the experiments of the author upon the larynx of the cadaver, to establish his theory of the nature and direction of the mechanical violence, necessary to produce such a lesion. In the present example, the diagnosis was: fracture or luxation of the right arytenoid cartilage, specially of its *processus vocali* and longitudinal tear of the corresponding vocal cord, between the elastic and muscular structures.

**38. Mechanical impairments of the functions of the crico-arytenoid articulation.** A most carefully considered article upon this subject, written by Dr. Semon, is now appearing in successive numbers of the *Medical Times and Gazette*. Its length, importance, and interest, lead us to postpone its careful abstract until its completion. Dr. Semon is to be congratulated upon the thoroughness and scientific accuracy with which he is working out this interesting question, and his labors will undoubtedly add much that is of value to laryngological literature and knowledge.

**42. Extirpation of the larynx.** Wieber has prepared a digest, not a very complete one, of the chapters on this subject in the work of Schüller, recently noticed by us. (ARCHIVES OF LARYNGOLOGY, vol. i, No. 1, p. 78.) Of the two, our own will be found much the most complete for use by those who do not possess the original article. (Lief. No. 37, *Deutsche Chirurgie*.)

**43. Glosso-epiglottic region.** Zuckerkandl, in a somewhat drawn-out paper, details the various anatomical changes in size, depth, etc., that may occur in connection with the lingual sinuses. The subject is one of no great import or interest; he himself alludes alone to the possible danger of a foreign body becoming impacted here, and causing serious annoyance by its irritation of the mucous membrane, which is supplied by the vagus.

## II.—PHARYNX, SOFT PALATE AND TONSILS.

1. BAKER. Fatty tumor of the soft palate. *Lancet*, October 23, 1880.
2. BARATOUX, J. On the treatment of chronic arthritic angina by the preparations of *Piu Mugho*. *Rev. Mens. de Laryngol.*, Bordeaux, 1880-I, i, 54.
3. BROWNE. Primary epithelioma of the tonsil. Case. *Trans. Path. Soc.*, London, 1879, xxx, 407.
4. DELAVAN. On some points in the anatomy of the nasal fossæ. *N. Y. Med. Jour.*, October, 1880.
5. FERRELL. Cynanche tonsillaris. *St. Louis Med. and Surg. Jour.*, 1880, xxxix, 230.
6. JACOBI. Pharyngeal catarrh. *Med. and Surg. Rep.*, 1880, xliii, 336.
7. LANGREUTER. On syphilitic strictures of the pharynx. *Deutsch. Archiv. für Klin. Med.*, November 18, 1880.
8. PETERS, G. A. Notes on four cases of pharyngeal tumor (myxo-sarcoma.) With remarks. *Med. Rec.*, N. Y., 1880, xviii, 565.
9. POST. Fibro-cystic tumor of velum pendulum palati. *Med. Rec.*, N. Y., 1880, xviii, 100.

10. RISLEY. Warty growth pendant to uvula ; no symptoms. *Phila. Med. Times*, 1880, x, 490.

11. SAALFELD. On the so-called pharyngitis granulosa. *Virchow's Archiv*, October 7, 1880.

12. SCHEPELERN. Cases of pharyngeal tuberculosis. *Hosp. Tidende*, vi, 1879.

13. THEVENOT. Accidents caused by the presence of a foreign body in the pharynx. *Union Méd.*, Paris, 1880, 3s., xxx, 3-7.

14. WASHINGTON. Aconite in tonsillitis. *St. Louis Courier of Med.*, vol. iv, 5, 1880.

15. ZAWERTHAL, W. H. On pharyngeal tuberculosis. *Wien. Med. Presse*, 1880, xxi, 1365.

1. **Fatty tumor attached to soft palate.** Baker reports the case of a child who, by a gulp, could bring into the mouth a tumor the size of the thumb, which was attached to the soft palate by a broad pedicle. He ligated the pedicle and cut off the growth, which consisted of fat, fibro-cellular tissue and a central rod of cartilage.

5. **Cynanche tonsillaris.** The object of this short paper, is to call attention to the diversity of opinion among authors as to what is meant by the terms cynanche tonsillaris, acute tonsillitis and quincy ; to the extensive prevalence of the former among children of all ages, and to a brief consideration of its diagnosis, prognosis and treatment. It contains nothing new.

6. **Pharyngeal catarrh.** Jacobi uses the spray, introducing the tube through the nose. When introduced, let the patient inhale once or twice ; when he feels the spray in the mouth, cease. The solution used is one of nitrate of silver, in strength from one-fifth to one-tenth per cent. ; this is injected twice a week ; in the intervals the patient washes out the nasal cavities (by snuffing up a saline fluid) three to four times daily. He says that as a rule cases will get well in two to three months.

7. **Syphilitic pharyngeal strictures.** Langreuter, in a very interesting article, gives the histories of all the cases of this lesion which have been reported during the last fifteen years, and adds the clinical details of a personal observation, in which the degree of contraction and displacement exceeds that of any reported instance. The treatment consists in meeting the constitutional indication by the use of anti-syphilitic remedies, and locally, "operative dilatation," by means of bougies, cutting dilators, and the like. The operative results in the above series of cases are carefully summed up by Langreuter and present some curious and interesting facts.

8. **Pharyngeal tumor.** After detailing the histories of four rare and interesting cases, the author sums up the whole question as follows :

First. These four tumors all presented the same pathological appearance, belonging to the class known as myxo-sarcoma. They were invested by a sac wall of considerable firmness, and were enucleable.

Second. Tumors of a large size, situated in the pharynx and having very broad origin and attachments, can be removed with safety, and will be found in

many cases to be enucleable. Should the tumor be of considerable size and distinctly cancerous in its nature, I should recommend non-interference.

Third. I should in all cases perform laryngotomy, as a preliminary step in the attempt to remove the growth, believing it to be a safe procedure.

Fourth. I should provide against the flow of blood into the trachea by the use of Trendelenburg's canula, and as an additional precaution crowd a piece of sponge with a long string attached into the pharynx, so as to shut off the laryngeal opening and œsophagus.

Fifth. A tumor of considerable size can be removed through the natural opening of the lips, although it greatly facilitates the operation to split the cheek, and in some cases it may be necessary to saw through the jaw-bone. The only objection to incising the cheek being the scar which remains; this is to be avoided, when possible, especially if the patient be a female.

9. **Fibro-cystic tumor of the velum.** Post gives the following history of a case: Margaret Cadwell, æt. 45; admitted into Presbyterian Hospital May 20, 1880, with a tumor occupying the right half of the velum palati. She had only noticed it about a month before her admission. It was not painful, and it did not give rise to any serious inconvenience. She attributed it to the irritation arising from false teeth. Before the operation I did not come to any definite conclusion as to the benign or malignant character of the morbid growth. I operated on the 22d of May, being prepared to make a free use of the Pacquelin cautery, if I had found the tumor firmly adherent to the velum in which it was imbedded. The patient being etherized, I pried the mouth widely open, and made a free incision through the buccal mucous membrane covering the inferior surface of the tumor. I ascertained at once that the tumor was loosely attached, and I succeeded without difficulty, with the aid of a blunt tissue-separator, in enucleating it. The tumor was of a firm texture, apparently composed of fibrous tissue, with a small cyst of the size of a pea at one extremity. The length of the tumor was about four centimetres and its breadth about three centimetres. I believe that tumors originating in the velum are of rare occurrence.

11. **Pharyngitis granulosa.** In a long and somewhat tedious article on this affection, which Saalfeld chooses to term "the so-called" pharyngitis granulosa, though he himself endorses the term, and considers it the best name for the disease, though it expresses but little, will be found the results of his pathological investigations and views as to its true nature, a point which just now is attracting some attention. The length and nature of the paper prevent a condensed abstract being made, and the reader is referred to the original.

14. **Aconite in tonsillitis.** Washington has so often verified Ringer's dictum respecting the effects of aconite in acute tonsillitis, that he considers it almost a specific. He gives to an adult five drops of the tincture at once in a little water, and one-fourth as much every twenty minutes afterward, until the pulse is reduced to 90 and profuse diaphoresis is produced; then a similar dose is continued hourly. Hot poultices to both sides of the neck, and a purgative dose of calomel, if indicated. If this fail to abort the disease, the next day the tonsils and surrounding parts are painted with a solution of nitrate of silver (gr. xxx— $\frac{3}{4}$  j.), and crystals of chlorate of potash are dissolved in the mouth—to be afterward swallowed; also five drops of the tincture of belladonna and two drops of the tincture of aconite root every two hours.

15. **Pharyngeal tuberculosis.** The pharyngeal tonsil, the neighborhood of Rosenmüller's fossa, and the roof of the naso-pharyngeal cavity, are specially liable to tubercular infiltration, on account of the abundance of follicular glands in these localities. The dorsum of the velum, the favorite seat of tertiary syphilis, remains free. Zaverthal insists that tuberculosis of the pharynx, which consists in the deposition of miliary tubercles, is never primary—and here he is in accord with the majority of writers—but is always preceded by pulmonary tuberculosis.—(See ARCHIVES No. 4, 1880, p. 387.)

### III.—NARES AND UPPER PHARYNX.

1. ALCAYDE Y. BLANCO. On nasal polypi. *Gaz. Méd. de Sevilla*, 1880, ii, 229–233.
2. BOSSOWSKI, K. Three cases of disease of the nose and trachea. *Przege. lek. Krakow*, 1880, xix, 557.
3. BOSWORTH, F. H. Nasal catarrh. *N. Y. Med. Record*, 1880.
4. COYNE. A contribution to the study of fibro-mucous polypi of the nasal fossæ, with pharyngeal prolongations. *Gaz. Hebdom*, 1880, i, 15.
5. DUPLAY. Lupus of the nasal fossæ. *Gaz. de Hôpitaux*, No. 123, 1880.
6. EVETZKY. On the nature of catarrh, and on its treatment with electricity. *N. Y. Med. Journal*, 1880, xxxii, 6, 20.
7. GANGHOFNER. The pharyngeal tonsil and bursa. *Bost. Med. & Surg. Jour.*, No. 14, 1880, Sept. 30.
8. GODEFROY. Note on a frequent accident during injections into the nasal fossæ. *J. d. Sc. Méd. de Lille*, 1880, iii, 545.
9. HALLADE. A contribution to the study of cancer of the upper pharynx, with consecutive perforation of the base of the skull. *Thèse de Paris*, 339, 1880.
10. INGELS. Observations on the employment of interstitial injections of chloride of zinc in the treatment of naso-pharyngeal and nasal polypi. *Ann. Soc. de Méd. de Gand*, 1880, lviii, 139.
11. JUSTI. On the indications for and use of the sharp spoon in tumors of the nasal fossæ and naso-pharyngeal space. *Wiener Med. Wochensch.*, No. 29, 1880.
12. KURZ, E. On ozæna. *Memorabilien Heilbr.*, 1880, xxv, 337.
13. LEROY. On epistaxis. *Bull. Soc. de Méd. de la Sarthe*, 1879; *Le Mans*, 1880.
14. LETZEL. Ozæna cured by iodoform. *All. Med. Central Zeitung*, 1880, xlix, 549.
15. OWEN. Lecture on the therapeutics of catarrh. *Chicago Med. Rev.*, 1880, ii, 450.
16. PÉAU. On deviation of the septum of the nose. *Centralblatt für Chir.*, No. 46, 1880.
17. ROTH. Removal of a large tumor from the nasal cavity. Case. *Wien. Med. Wochensch.*, 1880, xxx, 816.

18. STORROR, E. Nasal polypi and their removal, with cases. *Pacific Med. & Surg. Jour.*, Jan., 1881.

19. VIENNOT, T. F. On epistaxis and its value as an element in diagnosis and prognosis. Paris, 1880, 48 pp., 4°, No. 434.

20. WATSON. On rhinoscopy. *The Specialist*, London, vol. i, No. 1, 1880.

21. WEIL. On diseases of the nose and naso-pharyngeal space, with demonstrations of instruments and preparations. *Med. Corr.-Bl. d. Württemb. ärztl. Ver. Stuttgart*, 1880, 1, 233.

3. **Nasal catarrh.** Bosworth discusses the following points: First, what is nasal catarrh? Second, what are the tendencies? Third, how can we treat it? and fourth, can we cure it? Excluding syphilis with its attendant ulceration and necrosis, and disease of the accessory cavities of the nose, which constitutes true ozæna, all forms of nasal catarrh, he tells us, may be embraced under two heads: Hypertrophic catarrh with excess of secretion and narrowing of the passages, and atrophic catarrh with its resultant fetid discharges. The former is the variety that presents for treatment in the large majority of cases, and is the one discussed by the author in the article before us. He denies that there is any such diathesis as the catarrhal, saying that it does not exist, and that the disease under consideration is a purely local one. He is doubtful, also, whether there is ever a direct extension of the inflammatory process from the nares to the lower pharynx and larynx, but asserts that as a result of repeated exposure and acute inflammation, the chronic morbid process, already existing, becomes aggravated. Each fresh attack undergoes less perfect resolution, and as they recur, there is a disposition to their extension. The sequence is, then, a nasal catarrh, a pharyngitis, a laryngitis, a tracheitis, and finally a bronchitis. To the oft-asked question: Will the catarrh extend to the lungs? he answers that we are not justified in saying no; it is the tendency of the disease in many cases.

Passing to the question of treatment, we read, and as we read we learn, that for some years there has been a growing conviction on the part of those who come in contact largely with throat diseases, that topical agents fail to accomplish all that should be accomplished, and furthermore, that in the use of destructive agents lies the only plan of treatment which will enable us to cope, with any hope of success, with a large proportion of cases of nasal catarrh. This conclusion, it must be added, is the result of his personal conviction. Whether it is a true one or not the author does not propose to discuss, and proceeds to add some brief considerations in regard to the various means by which these destructive measures and other methods may be carried out. The use of the spray and douche is stated to be inefficient in more than controlling the disease. The first step in all forms of treatment is the use of a carbolyzed alkaline fluid in spray to thoroughly cleanse the part of the accumulation of mucus. In addition to this the application by the spray of a mild astringent, such as tannin, gr x—xx to  $\frac{3}{4}$  j., zinc sulphate, gr x to  $\frac{3}{4}$  j., potass. chlorat.,  $\mathfrak{D}$  j. to  $\frac{3}{4}$  j., etc., in the order of preference. These measures are in most cases, however, only regarded as aids to the others already enumerated. The question arises as to which of the other measures to adopt in a given case. It is, of

course, extremely difficult to formulate any rule for the selection of the special plan of treatment. If there is a mass at the posterior termination of the inferior turbinated bone, which will admit of or is sufficiently large to engage the snare, that instrument should be used. We possess no method of dealing with this condition comparable to it. If the mass anteriorly is large, rounded, and puffy, and occludes the nostrils, it should be transfixed and removed by the snare. It is a less painful and more efficient method than the cautery or the use of escharotics.

For those irregular and well-organized hypertrophies which have existed for several years and which involve the continuity of the lower and middle turbinated bone, the galvano-cautery affords the best means of treatment.

If the disease has not existed for a long time, and the thickened tissues have not become hardened and dense by organization, the acetic acid will accomplish all that can be hoped for.

In milder cases, not characterized by any marked degree of hypertrophy, the use of atomized fluids will serve an excellent purpose. Unfortunately, these cases are not attended with any very prominent symptom, and they do not, as a rule, present for treatment.

The use of chromic and nitric acids, much used and approved of by many specialists, is not discussed.

Finally, in the words of the author, there remains but one more unsettled question to which allusion should be made, and that is: Can we cure nasal catarrh? This is an extremely difficult question to answer. I do not believe any physician, I care not what his abilities may be, or how much wisdom or skill his experience in the management of these cases may have endowed him with, is justified in promising to cure any given case of nasal catarrh of long standing; and by a cure I mean a genuine, complete, and permanent removal of all the symptoms, but I do not hesitate in making the assertion, and I make it advisedly, that with our present means of diagnosis and knowledge of therapeutic resources in nasal catarrh, we can permanently remove most of the features of the disease which render it a present source of discomfort, and all those that constitute it a source of danger to the more vital portions of the respiratory tract.

7. **Pharyngeal tonsil** is a mass of adenoid tissue in the mucous membrane of the top of the pharynx, and the bursa is a median depression or fold in the same. It is frequently divided by a transverse fold into an anterior and posterior portion. Ganghofner considers the existence of the bursa as the rule and not the exception. He finds no demonstration of the theory that it represents a foetal passage from the pharynx to the cranial cavity. He describes the gross appearances of the pharyngeal tonsil of the new-born child essentially as follows: The mucous membrane of the roof of the pharynx presents a number (some 6 or 7) of ridges; the two nearest the median line run about longitudinally, but the outer ones are convex, their anterior ends converge in the forward third of the roof of the pharynx, and the posterior ends converge to a depression inclosed by the two innermost ridges. The ridges of the tonsil can be observed in embryos of even three months with the help of a lens. In children of two or three years they are more distinctly marked. Later, the outer ones are less plain. In the full-grown adult the pharyngeal tonsil is only exceptionally found, at least in examining from the surface.

II. **On the use of the sharp spoon in the nasal passages.** After a short review of the symptoms caused by the presence of tumors in the nares and naso-pharyngeal space, and of the varieties which are found in these localities, Justi enumerates the various instrumental means and operative methods which are at our disposal for their removal, namely: the curved and straight polypus forceps; different caustic holders; the ring knife; ecraseurs, with or without the galvano-cautery battery; and the simple sharp spoon, with its modifications. To reach the parts various operators have passed either through the mouth or face; have resected the upper jaw, totally or partially; divided the soft palate; dissected it up from the underlying hard parts; and finally, resected the palatine bones. More recently Gussenbauer, in order to afford proper space for operative steps, and to avoid disfigurement of the face, has, in a case of fibroma, seated with broad base at the roof of the pharynx, cut through, in the median line, the soft tissues covering the hard palate, dissected them back, on either side to the alveolar process, and then, with hammer and chisel, cut through and removed the palatine processes of the upper jaw and palatine bones. As a rule in treatment, sarcomatous and carcinomatous growths are, of necessity, removed by means of the knife, and the thermo-cautery then used to thoroughly destroy their bases and to check hemorrhage. Only in the case of small growths of this nature, and ones favorably situated, is the galvano-cautery efficient for radical removal. If the growth be inaccessible by the natural passages some one of the above operative procedures must be employed to gain access to it and its base. The pedunculated fibroid tumor is readily removable with the simple wire or the galvano-cautery loop, but if with broad base it will require the use of the knife. None now remain of the category of tumors enumerated, which are liable to occur in the nasal passages, aside from mucous polypi, but the adenoid or lymphoid growths; these being soft, congested, and multiple, require a means of treatment which is speedy and thorough, and which is to be found, according to Justi, in the use of the sharp spoon. The latter can be used without preparation of the patient, in any space and at any age; is easy to manipulate, and works quickly and with relatively little hemorrhage. For the nose a common sharp spoon with straight shank is required, while for the naso-pharyngeal space the shank is either curved or the sharp ring (Justi, *Volkmann Klin. Vorträge*, 125, p. 1060) is used. This bending of the shank allows of the instrument being used in any-sized space. As a rule, it is passed through the mouth, the tongue being depressed, behind the velum into the upper pharynx, but occasionally will need to be carried through the nose and directed by means of the index finger of the unemployed hand, passed behind the velum. The sharp spoon, fastened to a ring, is placed upon the index finger, which the ring must fit very accurately, and the former then very easily passed behind the velum into the upper pharynx.

Justi has used the sharp spoon in the naso-pharyngeal space in the manner here described, in 30 cases, with 26 cures. Facial erysipelas, or purulent inflammation of the middle ear, have not, in his practice, followed its employment, and hemorrhage is easily checked.

Mucous polypi of the nose are, in the majority of instances, easily and thoroughly removed by its means; it is in no way more painful than any other instrumental aid, and has the advantage over all that it quickly accomplishes its purpose.

16. **Deviation of the septum.** Péau gives the indications which determine the surgeon to operative interference in cases of deviation. These lie in the presence of complications, such as polypi, injuries, chronic catarrh of the mucous membrane, etc. A special forceps is used to hold the ala of the nostril, to check bleeding, etc., and the mucous membrane over the septum is then raised by means of an elevator, after a small incision has been made at the point where the upper lip impinges upon the bridge of tissue between the nostrils, through which it is passed. The cartilaginous projection is then cut away with the knife; it does not reproduce itself if the perichondrium has also been removed at the time of operation.

A single stitch serves to close the little cutaneous wound, which usually heals by first intention.

20. **Rhinascopy.** Watson's article deals alone with the method of performing anterior rhinascopy. No new ideas are advanced, save one—a design for an arrangement which will dilate and elevate the anterior nares, thus leaving the operator's hands free. It is more or less cumbersome, will take time to arrange, and will, therefore, hardly be considered practical.

#### IV.—TRACHEA.

1. CHAUFFARD. Stricture of the trachea, consecutive to an old tracheotomy. *St. Louis Courier of Med.*, November, 1880.

2. CROFT. Tracheotomy in a child under six months old. Recovery. *Lancet*, November 27, 1880.

3. DEMANGE. Tracheotomy in laryngitis stridulous. *Rev. Méd. de l'Est*, May 15, 1880.

4. ELIAS. A contribution to the accidents of tracheotomy. *Monatssch. für Ohrenheilk.*, No. 8, 1880.

5. HADDEN. Tracheotomy in croup. *N. Y. Med. Record*, October 23, 1880.

6. LEE-FEUGER. Tracheotomy in croup and diphtheria, with cases. *Chicago Medical Journal and Examiner*, October, 1880.

7. STEINMEYER. A successful tracheotomy in an infant nine weeks old. *Berlin. Klin. Wochensch.*, No. 40, 1880.

4. **Accidents in tracheotomy.** In a case of membranous laryngitis, Elias performed tracheotomy. A short time later, while removing the inner tube of the canula for the purpose of cleansing it, the child made violent movements of its head, with the effect of loosening the outer tube from its collar and allowing it to pass down into the trachea; dyspnœa immediately supervened, the stitches in the wound were cut, and it laid open, when the tube was seen, seized and removed. No disagreeable consequences followed.

5. **Tracheotomy in croup.** In a very interesting and suggestive paper, Dr. Hadden gives the condensed record of his experience, viz., eleven tracheotomies with seven recoveries. With the exception of the first case on the record, the subjects were all children of tender age, about to die of membranous croup. This is about  $66\frac{2}{3}$  per cent. of the whole number, or 60

per cent. of the children. Of those who died, not in a single instance was death the result of the operation, either directly or indirectly ; in every instance life was prolonged and the most distressing symptoms mitigated. But for the accident or carelessness in Case 5 (the assistant, in calling about two o'clock in the morning, found the attendants asleep, the tube filled with dry mucus and the child dead) one more would have been added to the successful cases of tracheotomy, which would have brought the percentage up to  $72\frac{2}{3}$ . In all cases of children operated upon, where recovery took place, the opening made into the trachea closed up in three or four days, so that no air could pass, and it healed perfectly in about fourteen days after the removal of the canula. In some cases, however, slight granulations on the outer side appeared during the process of closing, but these were readily reduced by a few applications of sulphate of copper.

6. **Tracheotomy in croup.** The authors publish a series of 22 cases of diphtheritic croup in which they performed tracheotomy, with a loss of fourteen cases. Their treatment is by a continuous spray of chlorate-of-potash solution with one per cent. of carbolic acid ; also lime water carbolized to the same degree, and four per cent. of glycerine. Internally quinine and alcohol in large and frequently repeated doses.

7. **Tracheotomy in child æt. 9 weeks.** A successful case in a very young infant (aged nine weeks) is recorded by Steinmeyer. He was sent for to see an infant who was said "to be ill with diphtheria and choking." The child came of a phthisical mother. It was normally developed, and during the first four weeks of its life had always been quite healthy. In the fifth week it had had abscesses near the anus, and others on the palms of its hands. The infant wasted considerably during this time. In the eighth week a cough had come on, and it daily became worse and emaciated, and difficulty in breathing set in. This latter symptom persisted, and on its becoming very urgent Dr. Steinmeyer was sent for.

When first seen, the usual symptoms of laryngeal stenosis were very manifest,—viz., cyanosis, with drawing down of the facial muscles during inspiration, which was loud and hoarse ; expiration was short and inaudible. There was great retraction in the epigastric region. Nothing abnormal, beyond oidium albicans, could be detected in the mouth or pharynx. The epiglottis, when examined by the finger, did not appear to be sufficiently swollen to be the cause of the obstruction. A laryngoscopic examination could not be satisfactorily made. On the exterior surface of the neck, over the right thyroid cartilage, and in size corresponding with it, a very slight swelling was detected ; it was only appreciable to the eye by carefully comparing the two sides ; it did not fluctuate. The temperature was  $103^{\circ}$  F. ( $39.5^{\circ}$  C.), and the pulse could not be counted. Tracheotomy was decided upon. But the exact cause of this obstruction could not be made out, although an abscess in the neighborhood of the larynx was suspected.

The operation was a very difficult one, and lasted an hour. The trachea was no larger than a goose quill ; it was displaced considerably to the left of the median line. An anæsthetic does not appear to have been used ; the operator, "on account of the infant's restlessness," found great difficulty in introducing the canula. The respiratory trouble ceased immediately on opening the trachea ; all cyanosis quickly disappeared, and the infant rapidly recovered. It

could not, however, take the breast on account of coughing. It rested well all the next night. Four days after the operation, the temperature still being 103° F., the child became very restless. The swelling over the thyroid cartilage was more manifest, and the superimposed skin somewhat reddened. An incision into it through the tracheal wound let out pus, and on enlarging the opening on a director a very considerable amount of pus was evacuated. The cough continued troublesome; attempts to remove the canula were unsuccessful. The temperature was normal. After the tenth day, the child, which, up to this time, had continued to improve, began to get worse; its food (milk) regurgitated through the nose. There was nothing appreciable to account for this unfavorable change. On the thirteenth day after the operation, however, suddenly, and while the child was trying to scream, a quantity of fetid pus was discharged through the mouth, while some more issued from the tracheal wound. Very shortly after this the child began to cry audibly. The canula was removed on the following day, and complete recovery was very soon established. It will be obvious that the case was one of retro-pharyngeal abscess. The diagnosis is often quite impossible, and, under the circumstances, tracheotomy appears to have been the only resource.

#### FOREIGN BODIES.

1. BROADBENT. Foreign body (locust bean) in the right bronchus; abscess beneath the diaphragm; peritonitis; pyæmic abscesses beneath the liver, etc. *Brit. Med. Journal*, Sep. 25, 1880.
2. CHIARI. Two cases of foreign body in the larynx (piece of bone and a bit of necrotic cartilage). Removal. Cure. *Monatssch. für Ohrenheilk.*, Sep., 1880.
3. GROOM. A piece of bread in the larynx. Imminent asphyxia. Tracheotomy. Recovery. *Lancet*, Oct. 9, 1880.
4. JORISSENNE. On foreign bodies in the nasal fossæ and their expulsion by the aid of Weber's nasal douche. *Bull. Gen. de Therap.*, Oct. 15, 1880.
5. KRISHABER, M. On the operative steps indicated in cases of foreign body in the glottis. *La France Méd.*, No. 100, 1880.
6. MUDD. Sand burr in larynx. *St. Louis Cour. Med.*, 1880, iv, 389.
7. SINGLETARY. A nickle in the pharynx dislodged after eight years and two months. *Louisville Med. News*, Nov. 27, 1880.
8. STONE. Impaction of a part of a walnut shell in the larynx. Removal by thyrotomy. Cure. *Med. Times & Gaz.*, Nov. 6, 1880.
9. WEST. Bronchotomy for foreign bodies in the air passages. *Cincinnati Lancet & Clinic*, Nov. 20, 1880.

#### MISCELLANEOUS.

1. BOURSIER. On surgical intervention in tumors of the thyroid body. *Thèse Ddgrégation*, Iu 8, Masson, Paris, 1880.
2. CASTEX. Notes on a case of peri-œsophagitis. *Ann. des Mal. de l'Oreille et du Larynx*, Sep., 1880.
3. FOWLER. On the association of affections of the throat with acute rheumatism. *Lancet*, Dec. 11, 1880.

4. KOCH, P. On ignipuncture in the treatment of diseases of the upper air passages. *Ann. des Mal. de l'Oreille et du Larynx*, Nov., 1880.
5. LYDSTON, G. F. Cellulitis of the neck accompanied by œdema glottidis. Difficult laryngotomy. *Chicago Med. Jour. & Ex.*, Jan., 1881.
6. SEILER. A new throat lozenge. *Phila. Med. & Surg. Rep.*, Oct. 2, 1880.
7. TERRY. Severe cut of the throat, followed by recovery. Tracheotomy. *Detroit Lancet*, Oct., 1880.
8. WING. Singing as a cause of uterine disease. *N. Y. Med. Record*, Dec. 25, 1880.

### 3. Association of affections of the throat with rheumatism.

Fowler says: I have lately kept notes of all cases of acute and subacute rheumatism, and find that in a very large proportion the attack has been preceded, at an interval varying from nearly a month to a few days, by some affection of the throat. It may be a simple catarrh, but in many cases it takes the form of acute inflammation of the tonsils. Without at present being able to give an exact percentage of cases presenting this premonitory symptom, I think I should not exaggerate if I were to put it at 80 per cent.

In some cases the throat and joints are affected simultaneously; and I have also met with cases of relapse from acute rheumatism where the primary attack and the relapse have both been preceded by throat symptoms. I believe this sequence of events is of too frequent occurrence to be explained on the hypothesis of a merely casual connection,—i.e., that a person having, through a chill or some other cause, had a "sore throat," further exposure has brought on an attack of rheumatic fever. Tonsillitis is a very common affection, and in many cases is not followed by rheumatic symptoms. Nevertheless I believe that not unfrequently it is an early manifestation of the rheumatic diathesis, and that by so regarding it we may prevent the further development of that tendency. This sympathy is not limited to rheumatism, for it is a matter of common experience that scarlet fever and measles, diseases which are almost invariably ushered in by severe affections of the throat, are frequently followed by the so-called "rheumatic" affections of the joints, by acute arthritis, and even occasionally by pyæmia.

8. **Singing as a cause of uterine disease.** Wing publishes some very interesting cases relating to this subject. He had several lady patients, who came to him for uterine trouble, and all voluntarily asserted their belief that the complaints were due to the "abdominal method" of singing which they had been trying to learn. This consists in the cultivation of diaphragmatic respiration at the expense of thoracic. It naturally causes great pressure to be put upon the abdominal organs. One Boston teacher boasts that by "proper practice" such power may be acquired that if the person be placed back against the wall, and a full-sized piano be moved up against the retracted abdomen, the latter, by the "abdominal method," can be so forcibly expanded that the piano will be pushed rapidly away. The new method adds greatly to the power of the voice. Dr. Wing found in the cases examined that it had caused a retroflexion or retroversion, with various coincident ills. He believes that in the "abdominal method" as now practised we have a fruitful source of uterine displacement.

## MISCELLANY.

The Editors take pleasure in announcing that the literary material on hand and in prospect is amply sufficient to justify a bi-monthly issue of this publication, did the income of the ARCHIVES warrant the additional outlay. It is therefore suggested that contributors be as concise in their articles as is consistent with a lucid presentation of their subject-matter.

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## AMERICAN MEDICAL ASSOCIATION.

## SECTION OF OPHTHALMOLOGY, OTOTOLOGY AND LARYNGOLOGY.

The next meeting of the AMERICAN MEDICAL ASSOCIATION will be held at Richmond, Va., on the first Tuesday in May, 1881.

It is very desirable that this section be well represented, and it is hoped that as many Laryngologists as possible will make their utmost endeavor to be present, and participate actively in the proceedings.

Those contemplating being present will please send the titles of any papers they may wish to present, and the probable length of time required for their reading, as soon as possible, to SWAN M. BURNETT, Secretary of the Section, 1215 I Street, Washington, D. C.

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At the annual meeting of the NEW YORK LARYNGOLOGICAL SOCIETY at the residence of Dr. R. P. Lincoln, No. 22 West 31st Street, Thursday evening, December 16, 1880, the following officers were elected for the ensuing year :

President, Dr. Louis Elsberg ; Vice-President, Dr. Beverly Robinson ; Secretary and Treasurer, Dr. Wm. F. Duncan.

Executive Committee : Dr. F. H. Bosworth, Dr. Beverly Robinson, Dr. A. H. Smith.

Dr. D. Bryson Delavan was elected a member.

The next meeting of the Society will take place at the residence of Dr. F. H. Bosworth, No. 26 West 46th Street, on February 18th.

WM. F. DUNCAN, *Secretary*.

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*To the Editor of the Archives of Laryngology :*

In the report of the Annual Meeting of the American Laryngological Association, ARCHIVES, vol. i, p. 367, I notice that I recommend for use in dry catarrh, an "Indian Catarrh Remedy." From the manner of its printing, it leaves the inference that I recommend a quack catarrh cure.

I recommended Pulv. Galanga, a most excellent application in these cases. The common name of the drug is Indian catarrh root.

I would be much obliged if the correction can be made, not from personal grounds but rather that I regard the remedy as a valuable one and worthy of being published.

Very truly,

F. H. BOSWORTH.

# ARCHIVES OF LARYNGOLOGY.

## A CASE OF PRIMARY TUBERCULOSIS OF THE LARYNX.\*

By J. SOLIS COHEN, M.D.,  
PHILADELPHIA.

**M**R. \* \* \* æt. 29, unmarried, for several years driver of an ice-wagon, and compelled to begin his daily round at 1 A. M., had complained of sore throat for four months when, December 23, 1879, he was sent to me by the advice of Dr. Ross R. Bunting, of Roxborough, to whom he had recently applied for relief. He stated that his throat had been lanced a few weeks before, and with considerable benefit; but it could not be determined, from his account of it, whether a tonsil had been lanced, as he supposed, or the epiglottis, which, from his description of his sensations, might have been œdematous at that time.

His great complaint was of intense pain in deglutition. The voice was good, nutrition apparently unimpaired, general strength well conserved, temperature normal, and pulse ninety in the minute. There was no cough, and there were no abnormal sounds audible on auscultation and percussion.

Laryngoscopic inspection revealed (fig. 1) a much thickened epiglottis, very pallid in aspect, and with the omega-like compression well developed. An irregular racemose ulcer was visible upon the thickened edge of the epiglottis, on the left side. A second ulcer, of like configuration, occupied the left glosso-epiglottic ligament and extended to the base of the tongue.

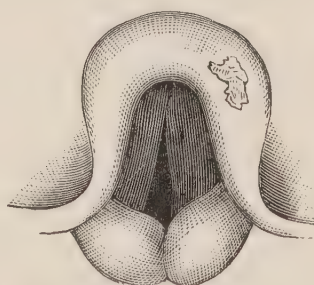


FIG. 1. Thickened, omega-like and ulcerated epiglottis.

\* Read before the American Laryngological Association, session 1880.

The supra-arytenoid eminences were enlarged and clubbed, and were overlaid with pale pultaceous deposit.

The ventricular bands were deeply congested and tumefied ; so that they quite concealed the vocal bands, which, from the character of the voice, were presumed to be normal.

The aspect of the parts was unmistakably that of tuberculosis ; but the most rigid exploration failed to reveal any evidence of pulmonary lesion.

Several elder brothers and sisters of the patient visited me with him from time to time—all hale and hearty ; but I was informed that within a few months a sister had died with a scrofulous tumor of the neck. There was no history of predisposition to pulmonary disease, and the exposure to which the patient had been subjected was said not to have exceeded that to which his brothers had been exposed, they all being engaged in the same business.

The pain on deglutition, in this case, far exceeded anything I had seen before from such limited local lesions. There was no return of fluids by the nasal passages. Solid food could not be swallowed ; and fluids had to be taken in small quantities. The act of deglutition produced intense pain in the throat and in the left ear ; and the effort to swallow brought tears into the eyes of the sufferer at each attempt. He was courageous, patient and docile ; and it was evident that his distress in swallowing was genuine, and by no means exaggerated to excite sympathy.

The gravest sort of prognosis was made to the family.

The disease progressed steadily, anodyne inhalations of benzoin and conium affording temporary relief from time to time, and local applications of morphia obtunding sensibility to a sufficient degree to permit the deglutition of small quantities of milk at a time.

By January 1st, ulceration had begun on the right side of the edge of the epiglottis, so that the two sides became symmetrically affected in a few days. Meanwhile, ulceration took place at the central portion of the border of the epiglottis. As this progressed, the ulcers first noticed

gradually coalesced, so that by January 5th, the serpiginous ulcerative process almost encircled the epiglottis, especially at the lingual attachment of the left side. During this time the intra-arytenoid structures underwent marked wrinkling without any solution of tissue (fig. 2). The progressive destruction of the epiglottis, and subsidence of some inflammatory engorgement, now permitted inspection of the interior of the larynx, revealing the vocal bands to be intact (fig. 3), as had been inferred all along from the character of the voice.

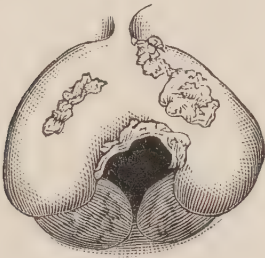


FIG. 2.—Progressive ulceration of epiglottis.

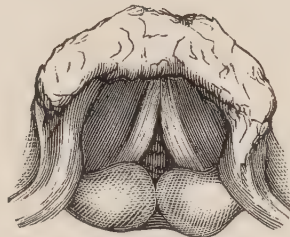


FIG. 3.—Destructive ulceration of epiglottis.

About January 10th, the uvula became œdematous, and a slimy, serpiginous ulcerative process began to mount the right palato-glossal fold (fig. 4). This ulceration reached its acme in two days, and then ceased to progress.

Physical exploration of the chest now for the first time revealed dulness at the left apex, with bronchial respiration, the sounds being still normal on the right side. The pulse rate was 108, and the temperature in the mouth, 99°. Within a week, this dulness extended over the upper lobe of the lung, and the opposite side began to be dull on percussion. Respiration became progressively impeded, and the patient, in consequence, began to be confined to the house, having been able, up to this period, to attend at my office.

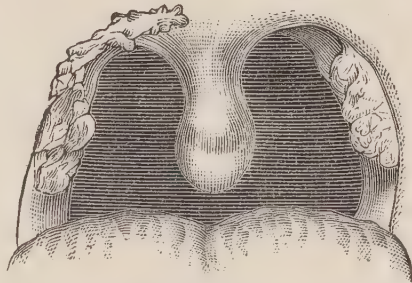


FIG. 4.—Ulceration of palatine fold, with œdema of uvula.

At this juncture, having visited the patient a few times at his home without affording any relief, I was dismissed from attendance, and the case was placed under the care of

a practitioner of homœopathy, who gave encouragement of relief with prospect of cure; and this physician continued in charge until the patient's death on March 7th.

An opportunity was afforded me to prosecute a *post-mortem* examination, in the expectation, on the part of the family, as I was told, that my diagnosis would prove to have been erroneous, and that the seat of disease would be revealed to exist in the liver, as confidently announced by the physician who had succeeded me.

The *post-mortem* examination was made by Dr. Seiler, in the presence of Dr. Bunting and myself, about sixty hours after death.

Dr. Seiler's report is as follows:

"The rigor mortis was well marked. The body was very much emaciated, and but little adipose tissue was found beneath the integument. The thoracic viscera alone were subjected to minute examination. The heart was normal. The liver was not diseased. The left lung was adherent throughout to the chest-wall, but the right lung was comparatively free.

"Tuberculous deposits were noticed in spots on the pleura of the left lung. Incisions revealed several small cavities in the upper lobe of the left lung, together with cheesy deposits. No cavities were found in the right lung, but there were tuberculous and cheesy deposits, though less well-marked than in the left lung.

"A few caseous glands were observed in the cervical region of the left side."

The larynx was removed, together with the soft palate, palatine folds, tonsils and tongue, and these parts were retained for close inspection. They exhibited lesions (fig. 5) very much as had been observed at the latest laryngoscopic examinations, save that the entire free portion of the epiglottis had been destroyed by ulceration.

The ulceration of the glosso-epiglottic sinuses was quite extensive, and had continued into the base of the tongue, with a partial loss of substance on the right side. The ulcerative process on the right anterior palatine fold had not progressed. The tonsils were intact. The ulceration on

the laryngeal surface of the epiglottis was quite marked, as also that upon the aryteno-epiglottic folds and the ventricular bands. The vocal bands were intact, as was also



FIG. 5. ULCERATION IN CASE OF TUBERCULOUS LARYNGITIS.

the whole of the subglottic mucous membrane of the larynx, and the small portion of trachea preserved. All these points are well seen in the specimen herewith pre-

sented for examination, and in the accompanying photographs which were taken while the specimen was fresh and whole.

Dr. Seiler was kind enough to make a number of microscopic examinations of sections of the lungs, larynx, uvula, and palatine folds, and to prepare some sections, which are herewith presented, for examination under the microscope. Concerning these sections, of some of which he has made the drawings herewith submitted, Dr. Seiler reported as follows :

“ The sections of lung presented the usual changes due to deposits of tubercle.

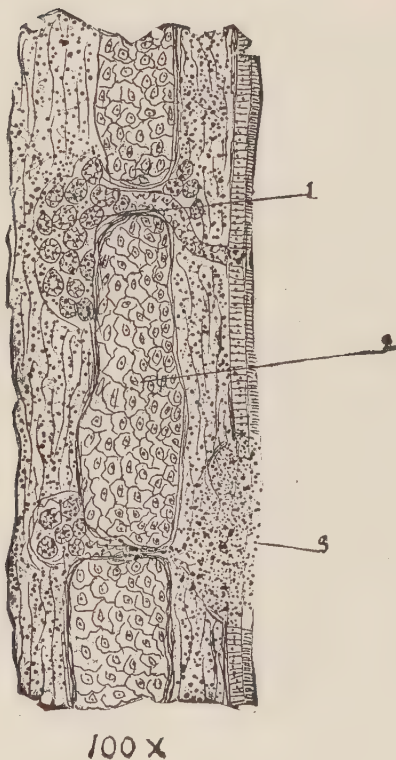


FIG. 6.

INFILTRATION OF EPIGLOTTIS.

1. Small-celled infiltration.
2. Cartilage.
3. Cheesy deposit.

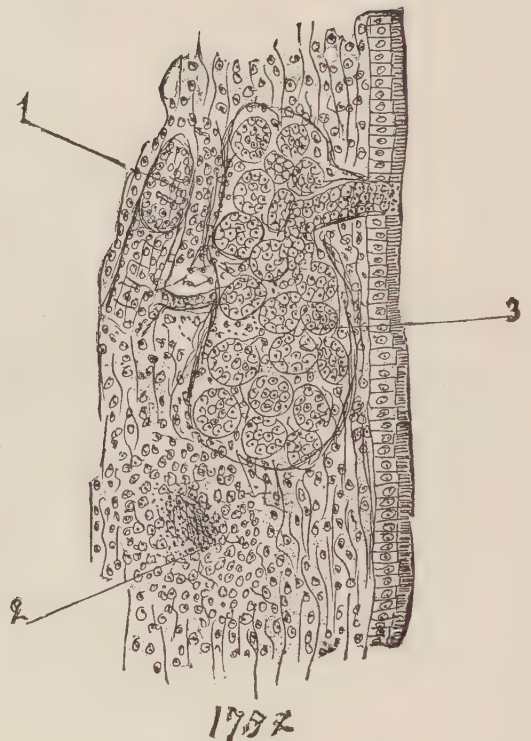


FIG. 7.

MUCOUS GLAND IN MUCOUS MEMBRANE.

1. Infiltrated vessel.
2. Dépôt of inflammation with cheesy centre.
3. Infiltrated mucous gland.

“ A longitudinal section of the larynx, carried through the epiglottis, ventricular band, vocal band, and the first ring of the trachea, exhibited, under the microscope, ulcerations of the mucous membrane, especially in the uppermost part of the remnant of the epiglottis. The submucous connective

tissue was largely infiltrated with a small-celled product, which showed, in many instances, a tendency to the formation of depôts with cheesy centres. In some of these deposits, adenoid tissue could be demonstrated. At the lingual extremity of the glosso-epiglottic fold a large cheesy mass was observed, surrounded by a collection of small cells.

“The glands and follicles showed a proliferation of their epithelium, and many of the ducts were filled with granular débris. The lymph spaces around the glands were likewise infiltrated with small cells, and the blood-vessels showed the same infiltration in their walls.

“The perichondrium, cartilages and muscular tissue appeared normal.”

The engravings, herewith presented (figs. 6 and 7), showing the microscopic appearance of two of the sections of the epiglottis, are from cuts executed by Dr. Seiler, from two of the slides exhibited under the microscope, for purposes of comparison.

Here, then, gentlemen, we have an instance of tuberculosis commencing in the epiglottis, invading the tongue, and the anterior palatine fold superiorly, and the supraglottic tissues inferiorly; with secondary tuberculosis of the lungs and lymphatic glands, but without local lesion in the infraglottic portion of the larynx, or in so much of the adjacent portion of the trachea as was removed from the subject; the local laryngeal lesions progressing but slightly, after the analogous manifestations were developed in the lungs; these manifestations commencing on the same side as the laryngeal lesions.

The exciting cause seems to have been exposure to intense cold.

The only applications that afforded any relief, while the case was under my care, were insufflations of morphia.

## NASAL STENOSIS.\*

By F. H. BOSWORTH, M.D.,

NEW YORK.

**M**OST of us recognize the fact that the successful treatment of nasal catarrh lies not in the use of douches, sprays, inhalations, snuffs, etc., but rather in the total ablation of that thickened or hypertrophied membrane which forms so prominent a feature of the disease, and by nasal catarrh in this connection I desire to limit myself entirely to the ordinary chronic nasal catarrh usually designated as hypertrophic, in which the prominent and characteristic feature is a hypertrophy of the mucous membrane lining the nasal cavity, especially marked over the convexity of the turbinated bones and on the septum, excluding fetid catarrh, ozæna, etc. If we examine a case of ordinary nasal catarrh we will find that this hypertrophy shows itself in three regions, which require special and separate consideration. These are the vault of the pharynx, the posterior termination, and the anterior termination of the inferior turbinated bones. The hypertrophy at the vault of the pharynx it is not intended to discuss. The hypertrophy of the turbinated bones anteriorly and posteriorly present, pathologically, no marked differences in character, and are continuous one with the other; still, the successful treatment of this condition in these two localities requires separate consideration in that the measures to which it is necessary to resort in the two cases are somewhat different. It would seem like asking your attention to a very small matter in presenting a paper to you on the subject of the proper

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\* Read before the American Laryngological Association, session 1880.

treatment of this hypertrophy at the anterior termination of the lower turbinated bone, and yet it is upon this subject that I propose to offer some brief suggestions, and while I am announced to read a paper on the subject of nasal stenosis, I wish to be understood in this connection as referring to stenosis of the anterior nares produced by the condition above alluded to.

The first question that arises in this connection is, What is the true nature of this hypertrophy? In the vault of the pharynx, as we know, it consists mainly in genuine hypertrophy of the glandular structures which are so richly distributed there, and which give the part the name of the pharyngeal tonsil. In the nasal cavity the glandular structures of the mucous lining are far less richly distributed, and we find the hypertrophy assuming a somewhat different character.

Under the stimulus of local irritation, which gives rise to that chronic inflammation of the mucous membrane lining the nasal cavities, which we call nasal catarrh, we have certain characteristic changes taking place in this mucous lining, which lead eventually to the development of a true hypertrophy, which manifests itself mainly on the convexity of the lower turbinated bone, to a less extent on the middle bone, and still less on the upper.

Now, in the form of hypertrophy with which we have to do in this connection, there are two or three features which are characteristic. The mucous membrane is in a state of chronic inflammation; it is markedly thickened; the blood-vessels are distended; the glandular structures are hypertrophied, and there is a new deposit, as the result, in the deep layers of the membrane, consisting of newly developed connective tissue mainly, together with proliferation of the rounded cells, which are deposited in the subepithelial layer and serve to increase the thickness of the membrane. In addition to this the blood-vessels of the deep layer of the membrane become enlarged, elongated, and tortuous to the extent of giving still more of an erectile character to the tissue. In the posterior portion of the cavity we find the epithelial coat of the mucous membrane undergoing hyper-

trophic changes more marked than in front. This coat becomes thickened by a proliferation of the epithelial cells, which, in place of being thrown off with the discharges, become permanently a portion of the membrane.

This process gives the surface of the membrane in this portion a peculiar appearance which does not obtain in the anterior portion. When seen by the rhinoscopic mirror it is notably of a pale, ashy color, with a somewhat rugous, seamed or fissured outline resembling very much an ordinary grub worm, so much so that I have usually, in my teaching, given it the name of grub-worm hypertrophy. This appearance is seen not only on the convexity of the turbinated bones, but also on the septum. The recognition of this stenosis is quite simple, the nostril being dilated and the tip of the nose tilted upward; the mucous membrane covering the lower turbinated bone will be seen projecting into and encroaching upon the cavity of the nares, a rounded, reddened tumefaction of a boggy appearance, and of a doughy, semi-elastic consistence. It grows inward, and may go on to the extent of contact with the septum or floor of the nares. The symptoms to which it gives rise are mainly those due to mechanical obstruction, though, of course, there is increased secretion. There is a feeling of stiffness or fulness about the nares, interference with free nasal respiration, and a constant disposition to blow and clear the nose, which, as a rule, fails to give the desired relief.

In addition to this, the membrane possesses a peculiar action under the influence of damp and chilly atmosphere. It possesses something of a hygroscopic character, by which it absorbs moisture and swells in such a manner as to produce a temporary increase of the chronic trouble; this is not due to taking cold, although it produces many of the symptoms of an acute coryza, but is simply the result of local irritation of the damp and chilly atmosphere acting directly upon the membrane. Ordinarily reflex sensibility of the nasal membrane in this state of chronic hypertrophy is markedly impaired, and sneezing does not usually occur; but under the influence of these exacerbations, violent

sneezing becomes quite a prominent symptom. If the membrane is hypertrophied to the extent of producing points of contact between the turbinated bone and septum or floor of the nares, the symptoms, due to the stenosis, of course, are, to an extent, aggravated by the increased encroachment on the lumen of the nose. In addition to this, the direct result of this contact is to produce mutually reacting points of localized irritation, which result in an increased secretion from the part, due partially to the simple irritation caused by the touching of the parts, and also to erosions which are liable to occur as the result of the condition. The important point, of course, is the treatment, and it is with reference to measures for the relief of this condition that this paper is offered. Douches and sprays, or the application of any local astringent, are of no avail in more than moderately relieving this condition; it is necessary that the hypertrophied tissue should be destroyed or ablated. The means which have been suggested for the accomplishment of this purpose, and to the comparative merits of which I propose to call your attention, are local escharotics, the forceps, the knife, and compression by means of bougies or tents.

Dr. Wagner, of this city, some years since, resorted to the use of sponge tents, which he had constructed of a proper shape for introduction into the nares, and which he claimed were efficient in producing absorption of this hypertrophied tissue. The advantage of this method of treatment consisted mainly in its simplicity, and the accomplishment of the purpose without resort to the harsher measures of the forceps or the use of caustics. There is one serious objection, it seems to me, in this measure, in the difficulty of so placing the tent that it will produce equable pressure over the part it is desired to treat. Its action must necessarily be limited to the convexity of the turbinated bone, whereas, not infrequently, the growth is on the under side of the bone, reaching down to the floor of the nares. Furthermore, the insertion of the sponge tent into the nose is attended with a great deal of discomfort and annoyance while it remains *in situ*. I have never made use of this measure,

but, on theoretical grounds, should regard it as failing to accomplish the desired end.

The use of steel sounds has also been advocated for overcoming this obstruction, properly shaped bougies being passed into the nasal cavity, dilating it in the same manner as an urethral stricture. As we all know, any instrument passed through the nasal cavity when there is any degree of stenosis, gives temporary relief; but that permanent relief can be given in this way is extremely doubtful. Of late we have heard more or less, in the journals, of the use of gelatin bougies, containing various ingredients, astringents, alteratives and absorbents, which are passed into the nasal cavity and allowed to melt under the influence of the heat and moisture of the part. Some years ago I made use of this measure in a number of cases, passing the gelatin bougies into the middle meatus, where they were allowed to remain until they had entirely melted, which, as a rule, required about an hour. It was a period of extreme discomfort to the patient, but followed, apparently, by some relief; this was only temporary, however, and I failed in any case to see any permanent benefit resulting from the procedure. I should, then, be disposed to say, with a considerable degree of positiveness, that we possess no means of remedying stenosis of the nares which does not involve the removal of tissue by the knife, the forceps, or by escharotics.

Of the purely surgical methods, there are two which have been recommended—the knife and the forceps. The use of the knife is simply the use of a curved probe-pointed bistoury, which is passed into the nares and the offending tissue sliced off. The other plan consists in the introduction of a stout-bladed pair of forceps, with a row of teeth on the side, which are passed into the cavity, and the offending tissue is seized and torn away. It is a violent measure, attended with a great deal of pain and a great deal of injury to the parts. It is followed by a marked degree of irritation and inflammation, and it is difficult to nicely localize its action, as not only hypertrophied tissue but healthy tissue may be torn away, and even por-

tions of the turbinated bone, in view of which I do not believe we are justified in resorting to it when we have the means of accomplishing the same purpose by milder measures.

In addition to these measures we possess the means of destroying this tissue by caustic applications, and herein, it seems to me, lies the proper method of removing the condition under consideration.

Of the caustic applications, we possess nitric acid, nitrate of silver, acetic acid, the actual cautery, and the galvano-cautery, leaving out of consideration caustic potash, Vienna paste and agents of that class, whose use is attended by so many serious objections in the violence of their action and the excessive amount of the local inflammation excited, that we discard them without discussion.

With regard to the use of nitric acid: in this agent we possess a means of rapid destruction of tissue, and one which serves an excellent purpose in the treatment of the condition under consideration. One difficulty presents itself immediately, namely, that it is extremely difficult to nicely localize its action, and to confine the application only to the diseased portion. This difficulty has been overcome by an ingenious little device of Dr. Smith, of this city, of using a glass tube with an oval fenestrum in its extremity, into which he inserts a probe wrapped with a pellet of cotton, which has been dipped into the acid. He passes this tube or canula into the nasal cavity in such a manner that the fenestrum lies upon the part that he desires to cauterize, when he carries the probe directly to the opening. In this manner the action of the acid is confined entirely to that portion of the mucous membrane which lies opposite the fenestrum in the canula. It is an exceedingly useful device, and well adapted for the treatment of these cases, and is the best device we have for making an application of nitric acid. As regards the action of the acid it destroys a considerable depth of tissue and relieves the stenosis, but is liable to create an ulcerated surface which may prove annoying. I should say then of

this agent that the main objection to its uses lies in the fact that we cannot limit the extent of its action nicely. Of nitrate of silver, on the other hand, its use is somewhat limited; when applied to a mucous membrane, it forms an insoluble albuminate of silver which coats the superficial layer in such a way that the depth of tissue destroyed is but small in amount. It is also a very painful application, and is liable to excite a considerable degree of inflammation or irritation of the parts. I have found in many cases also that these applications seem to have done harm rather than good, apparently for the reason that the destruction of tissue is more than counterbalanced by the irritation and consequent swelling which sets up in the parts as a result of the cauterization, which causes eventually an additional thickening or hypertrophy.

In acetic acid I think we possess a remedy which offers very marked advantages in its use over any of the above-mentioned chemical agents. Its well-known action in the localized hypertrophies of the superficial layer of the skin, would suggest its availability in hypertrophy of the mucous membranes, especially in those hypertrophies in which the epithelial layer takes an active part, which it does, as we know, in the affection under consideration.

I have used this remedy in a large number of cases, and rarely have been disappointed of excellent results; of course it is somewhat painful and often times extremely so. And yet the application can be so managed as to give rise to no pain or very little annoyance. The method I generally pursue is as follows: I use a probe, with two inches of its extremity flattened and bent at an angle of about thirty-five degrees. Wrapping a pledget of cotton around this I saturate it with glacial acetic acid, and sweep it rapidly through the nasal cavity, following the turbinated bone, crowding, as it were, through the narrow portion between the convexity of the bone and the septum. While effecting this manœuvre I hold the atomizer in the other hand in order to spray the parts, the instant the probe is withdrawn, with Dobel's solution, which, as many of you know, is composed as follows;

℞

Acidi carbolici, gr. viii.

Sodæ biborat.,

Sodæ bicarb.,  $\overline{aa}$ , gr. xij.Glycerinæ.,  $\frac{z}{3}$  j.Aquæ *ad*  $\frac{z}{3}$  viij. ℥

By throwing this into the cavity and thoroughly bathing the parts with it, any pain resulting from the application of the acid is immediately arrested, the solution seeming not only to neutralize the excess of acid, but also acting as a sedative, and thus the application becomes an extremely simple and painless one. Of course so strong an application as acetic acid results to produce more or less irritation of the parts, with consequent swelling, so that for perhaps 24 hours there is a sense of fulness about the nose, with an increase of stenosis, but there very soon commences to be discharged small portions of membrane, white and shreddy in character and resembling an ordinary croupous membrane. The exfoliation of these pieces of membrane may continue for several days or even a week, but the narrowing of the nasal cavity, with the interference with nasal respiration, is relieved on the second or third day after the operation, as a rule, and the result of the application is a very marked degree of acquired freedom of the nose, resulting, of course, in affording very great relief and comfort to the patient. A single application of acetic acid is attended with marked benefit to the condition which it is desired to relieve. As a rule, however, a second or third application will be required. I know of no special objection to the use of the acid in these cases more than the fact that, like all chemical agents used for destructive purposes, whereas they destroy the superficial layer, they seem to stimulate to renewed activity the chronic inflammatory process which is going on in the deep layers of the tissue, so that while we are destroying on the surface we are setting in play forces from below, which, to an extent, neutralize and counterbalance what has been accomplished in a curative way.

In this respect, however, there is a great difference in

cases ; just what this difference is I am unable to say, and yet, as a matter of observation, in some cases these caustic applications are attended with marked and apparent permanent relief, while in others the relief is temporary and short-lived.

This objection to the use of chemical agents, I think, lies against acetic acid to a far less degree than any agent that I have used, and the good results from its action are better and more permanent than from nitrate of silver or nitric acid, so that in a given case of ordinary hypertrophic stenosis of the nasal cavity manifesting itself anteriorly, of the chemical agents which present themselves for use in its relief, I should give very decided preference to acetic acid over all others.

There is another method of treating these cases which presents advantages, it seems to me, over all others, viz. : in the use of the galvano-cautery. The actual cautery we alluded to in the opening of this paper as an available method of treating these cases, but there are certain difficulties in the way of its use which render its application somewhat limited. It is difficult of manipulation ; it is not easy to avail one's self of anything more than a dark-red heat ; it is extremely ephemeral in that the cautery iron cools very rapidly ; the amount of destruction of tissue that can be accomplished is limited ; and, moreover, it is very painful. Were not these objections sufficient to exclude hot irons or the actual cautery from the nasal cavity, there is one other objection in the form of a danger attending its use, that is, the danger of exciting an acute inflammation of an aggravated character, which may extend to the integument in the form of erysipelas.

This is a danger which should be borne in mind in connection with the use of any caustics in the nose, and whereas it is not a matter of frequent occurrence, yet it is one of the things to be anticipated. An acute coryza, as we know, may occasionally be the starting-point of facial erysipelas ; the localized inflammation—the result of local irritation—may assume a more aggravated form than the

idiopathic process. This is a reasonable deduction from analogy and is also a matter of clinical observation. This accident I have seen happen in a number of cases, and though they are not sufficient to base any statistics upon, I am disposed to regard nitrate of silver as the remedy which is the most liable to give rise to it, that is, its action is rather more of a stimulant than a caustic. Next to this I should place nitric acid, then the actual cautery, the galvano-cautery, and, finally, acetic acid. I thus place the galvano-cautery next to acetic acid, lowest down in the list, in its tendency to cause excessive irritation or inflammation resulting from its use. It is of all agents within our power the most satisfactory, the most thorough, and the one which is freer from sequelæ which interfere with its successful use. As to the special method of its application there is little to be said; the little device shown by Dr. Shurly, of Detroit, at the last meeting of the Association, has proved so excellent in my hands that it leaves little to be desired. It is simply a device for protecting the septum while applications are being made to the turbinated bone. The only modification of the ordinary operation which I have been in the habit of pursuing is to make linear incisions in the hypertrophied tissue instead of destroying on the face or convexity. The little instrument I use for this purpose I show here, which consists of an ordinary knife so constructed as to present a cutting edge to the face of the diseased tissue. Passing the electrode into the nasal cavity and beyond the thickened mass, and with the knife presenting externally, I draw it back and out of the nose, treating it very much as an ordinary urethral stricture is treated by the urethrotome; I make one or a number of these incisions, according to the size and extent of the mass. The effect of this is to produce a deep cut into the deep layer of the membrane, which, in cicatrizing, produces a considerable degree of contraction, and thereby relief of the stenosis, which is far less liable to return under the stimulus of the local inflammation excited by the operation.

An additional advantage of this is that the erectile tissue

is cut into and to an extent destroyed, and thereby relief given to those constantly recurring attacks of temporary stenosis which characterize the affection and which occur under the stimulus of atmospheric irritation. These operations sometimes require to be repeated at the end of a week or ten days ; as a rule, however, a single operation is oftentimes all that is demanded.

## A CASE OF PAPILLARY GROWTH OF THE LARYNX.\*

BY CARL SEILER, M. D.,

PHILADELPHIA.

ON the 14th of June, 1879, I was asked by my friend, Dr. Ludlow, to see with him a case of aphonia, due, as he told me, to a small growth on the vocal cords, and, if possible, to remove it.

The patient, a fine-looking gentleman 64 years of age, told me that he had been suffering from sore throat for some time, dating the beginning of the trouble a year and a half back. He had been treated for chronic laryngitis by local applications and counterirritants with indifferent success until he consulted Dr. Cohen, who made a laryngoscopic examination, and detected a small papillary growth on the left vocal cord, and advised an operation for the removal of it. The patient, however, would not consent to an operation, and consulted other physicians who endeavored to absorb the growth by local applications. A few weeks before I saw him a swelling began to show itself in the neck over the thyroid cartilage, which was very painful, the pain being felt most in the left ear, and there was some dyspnoea, aphonia and slight cough. The general health was very good, and there was no acceleration of the heart's action or increase of temperature. A laryngoscopic examination revealed a papillary growth lying upon the left vocal cord and apparently springing from the left ventricle, which I could not then, however, definitely determine, because the ventricular band on that side was greatly tumefied, as was also the ary-epiglottic fold, including the arytenoid cartilage.

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\* Read before the American Laryngological Association, session 1880.

The right ary-epiglottic fold and arytenoid cartilage presented also a swollen appearance, but not to the extent seen on the left side. The epiglottis was swollen and red, and a small white protuberance of the size of a millet-seed was noticed at the anterior angle of the glottis, springing from the base of the epiglottis. The vocal cords appeared normal and were moved together in the act of vocalization. A view of the subglottic cavity could not be obtained on account of the great tumefaction of the parts above.

It was decided to remove the tumor through the mouth, and the patient placed himself under my care. I first introduced Mackenzie's cutting forceps without, however, being able to grasp the growth on account of the great irritability of the parts, and I then educated the patient by introducing Stoerk's guillotine, with which I succeeded in removing a good-sized piece of growth a week afterward. This caused very great pain in the left ear, and did not result in a diminution of the dyspnœa or aphonia. The white protuberance at the base of the epiglottis I noticed was rapidly growing larger, and was pushing backward in the space between the left vocal cord and the ventricular band.

In the meantime the neck had been poulticed with a view to cause the supposed abscess to break, and several leeches were applied to the neck. One of the leech bites, several days afterward, began to discharge pus, and the opening being probed was found to be a sinus about  $1\frac{1}{2}$  inches in length, and running backward and to the left in such a way as to cause me to believe that it ended at the left wing of the thyroid cartilage. Finding this to be the case, I thought it probable that the white tumor which had been growing so rapidly in the larynx was nothing but the mucous membrane loosened and distended with pus, which had found its way into the interior of the larynx. I then decided not to make any further attempts at removing the growth from the vocal cord for the present, lest I might break the sac of pus and allow its contents to escape into the trachea, but to endeavor to remove the pus through the external opening by aspiration and a drainage tube.

On July the 7th, not having seen the patient for two

days, I found him with the dyspnœa alarmingly increased, an anxious expression of countenance, and the voice, which had before been an audible whisper, reduced to nothing.

A laryngoscopic examination showed all the parts greatly tumefied, and the white tumor occupying almost the entire left side of the larynx. I advised immediate tracheotomy, which I performed a few hours later, Drs. Cohen and Ludlow assisting me.

The relief following the operation was very marked, and the patient recovered rapidly, so that he was able to leave his bed four days after the operation, and took a drive two weeks later.

The tumor in the larynx went on steadily increasing although both Dr. Cohen and myself frequently removed portions of it, and the abscess in the neck also increased in spite of everything that was done to reduce it. I repeatedly urged the advisability of making a free incision into it, but was always refused until, at the request of the patient's family, Dr. R. Lewis was called in to see the case. He fully concurred with me in opening the abscess, and expressed it as his opinion that the case was one of malignant growth, and advised extirpation of the larynx. Drs. Cohen, Ludlow and myself, however, did not deem this advisable at present, and it was decided to make an incision into the supposed abscess, which I made in the median line, and found that after I had penetrated the skin the knife did not encounter any hard tissue whatever, and on introducing the finger, after the knife had been removed, it went directly into the larynx, the vocal cords being distinctly felt. On withdrawal of the finger a mass of tumor showed itself in the opening and was removed. It proved to be a papillomatous growth of the size of a large almond. After the operation the patient had a slight chill from which he soon recovered, but the symptoms of dysphagia and aphonia were not relieved by the removal of the growth. The external opening was kept open and dressed with carbolized oil, and a careful examination, a few days after the operation, showed that all the soft tissues of the neck in front of the larynx, as well as the interior of the larynx were infiltrated

with the growth. A laryngoscopic examination showed the growth to have risen above the ary-epiglottic folds, so as to keep the epiglottis in an extremely erect position, thus causing pain at deglutition. The pain in the ear which had been lessened by the operation, soon returned, and became unbearable as soon as an attempt was made to remove any of the growth through the external opening. Deglutition became more and more difficult and painful until, finally, it was impossible for the patient to swallow anything but liquids, and these in small quantities. The constant pain and irritating cough, together with the want of sufficient nourishment, had reduced the patient to such an extent that he was unable to leave his bed. A laryngoscopic examination about that time showed the larynx completely filled with a large mass of tumor which interfered with the movements of the tongue and epiglottis, and I then decided to split the thyroid cartilage and to thoroughly clear the larynx of any growth. Thyrotomy was performed by myself on the 7th of September, Drs. Cohen, Ludlow and Packard being present, and a large mass of tumor, weighing in the aggregate two and a half ounces, was removed both from the interior of the larynx and from the soft parts of the neck overlying the larynx, chiefly by scraping with a sharp uterine curette until communication was established between the external opening and the oral cavity above, and the trachea below. The scraped surfaces were then washed with carbolic-acid water and carbolized oil, and the external wound filled up with absorbent cotton, no attempt being made to bring the edges together with sutures, because I wanted to watch the redevelopment of the tumor, if such would take place, and to be able to destroy it with caustics if possible.

The patient made a very rapid recovery, and on the third day after the operation was able to swallow solids without pain or discomfort, the pain in the ear having also disappeared. He gained strength rapidly with plenty of nourishing food and under iron and quinine, so that he was able to be out of doors. An examination a few days after the operation showed that the larynx was clear of any growth,

but that the trachea above the tracheal tube was still filled up, so that no air could be forced through it. The external opening was allowed to close partially, and through the remaining orifice I almost daily removed portions of growth from the trachea without, however, succeeding in establishing communication between the larynx and trachea.

Finally, on October 24th, at the request of the patient, I performed a third operation, Drs. Cohen and Ludlow assisting me. This consisted in splitting the cricoid cartilage and the first ring of the trachea, and then removing the growth with the curette and the finger-nail. Both in the second and third operations at the larynx a very ingenious tracheotomy tube, suggested by Dr. Cohen, was used, which prevented any blood from entering the external tracheal opening and very greatly facilitated the administration of ether. The last operation was performed at three o'clock in the



FIG. I.

afternoon, and the patient felt well enough to leave his room and enjoy his supper. Two days after he was able to force air through his larynx and speak in a hoarse voice.

This favorable condition lasted, however, but for a short time, and the larynx as well as the trachea soon began to fill up again, the tumor growing faster than I could remove it either by instruments or caustics.

The dysphagia, cough, and pain in ear gradually grew worse again, and the larynx and trachea were filled with the growth in a short time, in spite of all efforts at keeping them clear. Under these circumstances the patient, from want of nourishment, sank gradually, and finally died on April 19th from inanition.

Throughout the course of my attendance, I could not detect any signs of malignancy of the growth. No glandular enlargement, no cachexia, no great rise in temperature, and a microscopical examination of the pieces of growth removed showed an arrangement of epithelial cells as we find it in papilloma; the connective-tissue stroma showed, however, a tendency to a degeneration into the embryonic condition. (Fig. 1.) Unfortunately, a *post-mortem* examination was refused by the family, so that it could not be determined whether the growth was purely a papilloma pushing its way into the interstices of the surrounding tissues, or whether it had assumed the character of an epithelioma, infiltrating the tissues themselves with epithelial cells. The absence of many of the clinical features of epithelioma of the larynx, and especially the want of ulceration, make me incline to the view that the growth was a papilloma.

The case is of interest in illustrating the great tolerance of even an enfeebled system to surgical interference of such a grave character as tracheotomy, thyrotomy and laryngotomy.

## FRACTURE OF THE LARYNX.\*

By J. O. ROE, M.D.,

ROCHESTER, N. Y.

ON the 8th of last December, at about 12 o'clock, I was requested by Dr. C. E. McKelvey, to visit with him a man by the name of Joseph Rodgers, in the rear room of a saloon at the corner of North Water and Mortimer streets.

On our arrival we found the patient suffering from great dyspnœa, on account of some obstruction in the throat, and expectorating and occasionally vomiting blood. We discovered at once that he had received an injury about the neck, from the appearance of a bruise over the region of the larynx.

On a laryngoscopic examination, I saw that there was a large swelling, evidently from extravasated blood, in the right ary-epiglottic fold, almost closing the larynx, and that there was also fracture of the thyroid cartilage.

Seeing that no time should be lost in performing tracheotomy, I hastened to my office for my instruments (which, unfortunately, I had not taken with me, not knowing the character of the case), and in the meantime Dr. McKelvey summoned to our assistance Dr. Mott Moore, who was passing on a street near.

While I was gone, which was but a few moments, the man became suddenly choked up, spat and vomited more blood, and on my return was just breathing his last. I at once opened his trachea and, with the assistance of Dr. Moore, began artificial respiration, which we continued for

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\* Read before the American Laryngological Association, session 1880.

nearly an hour, but found all attempts at resuscitation futile. This was evidently due to his almost bloodless condition from the hemorrhage, there not being sufficient blood in the vessels to reëstablish the circulation.

The facts elicited at the coroner's examination, as testified to, are as follows :

Early that morning, while in an intoxicated condition from the night's debauch, he got up, dressed himself and went down stairs on some errand before the other occupants had arisen.

When they went down about 7 o'clock, they found him lying on the floor injured about the neck and bleeding quite profusely from the mouth. The injury, he told them, he received by falling on the corner of a table which was standing not far from the foot of the stairs he had to descend.

For some unexplained reason he was allowed to remain in this condition during the forenoon, vomiting occasionally the blood he swallowed, spitting out that which came in his mouth, and with a continually increasing dyspnœa.

This fact of their neglect to summon timely medical aid, and the questionable character of his associates, caused a strong suspicion of foul play.

Another fact increased this suspicion. The building in which he lived he had owned, but rented to the family who kept the saloon, and with whom he boarded. The day previous he had sold the property, it was reported, for \$4,000 cash, and he was undoubtedly supposed to have a large amount of money about his person.

No other facts were learned, and no *ante-mortem* statement was made, except to a priest, who was called some time before the physicians.

He was a single man, and his morals, judging from his habits and associations, were, to say the least, anything but good.

The autopsy I made in the evening at the request of our coroner, Dr. Farley, in presence of Drs. Mott and Richard Moore, McKelvey, Benford and others.

No external marks of violence or injuries were discovered, except those about the neck and face.

On the right side of the chin there was a cut, one inch long, down to the bone, and a shallow cut, one inch long, just below the chin on the opposite side.

There was a slight contusion over the larynx with marked discoloration.

An incision was made along the median line of the neck and the larynx removed entire.

No other organs were examined, as it was not deemed necessary.

On examination of the larynx, the right ala of the thyroid cartilage was found fractured, as shown in figure 1.

The central point was about half an inch from the median line, extending inward to the suprathyroid notch, and downward to the cricoid cartilage. In the centre, where the force of the impinging body was greatest, a piece of the cartilage was removed or punctured out, as it were; this piece has been lost.

In the ary-epiglottic fold was found the swelling from the extravasated blood which I had seen with the laryngoscope, and which is shown in figure 2.

In the lower border of this swelling, near the ventricular band, there is a rupture of the mucous membrane, which gave rise to the hemorrhage.

The extreme danger to life always renders fracture of the larynx a very grave accident.

Rupture of the mucous membrane increases the danger from hemorrhage and from attending inflammation and swelling. But the more serious form of laryngeal injury, and one almost invariably proving fatal, is the fracture of the cricoid cartilage, either alone or associated with that of the thyroid and trachea.

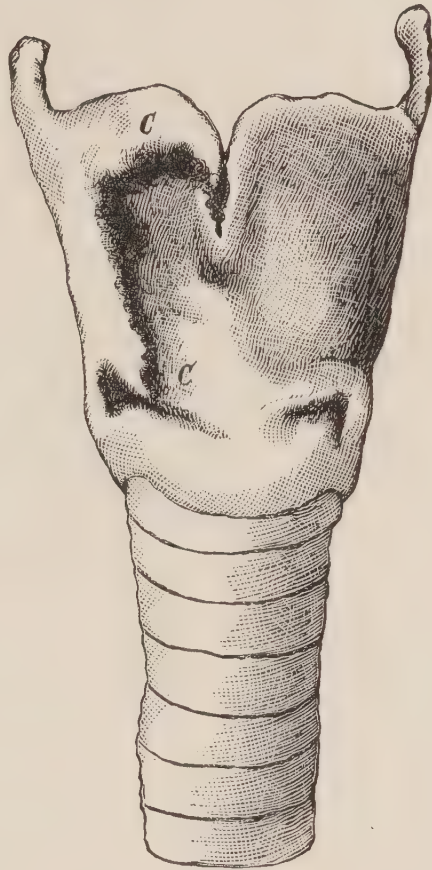


FIG. 1.  
Anterior view of cartilage, showing location of fracture—C, C.

Of sixty-two cases of laryngeal fracture collected by Holmes,\* death resulted in all the cases (sixteen in number) in which the cricoid cartilage was found involved.

But few cases of laryngeal fracture recover without tracheotomy; therefore it is not only a safe rule to follow, but should become an absolute law, to perform tracheotomy

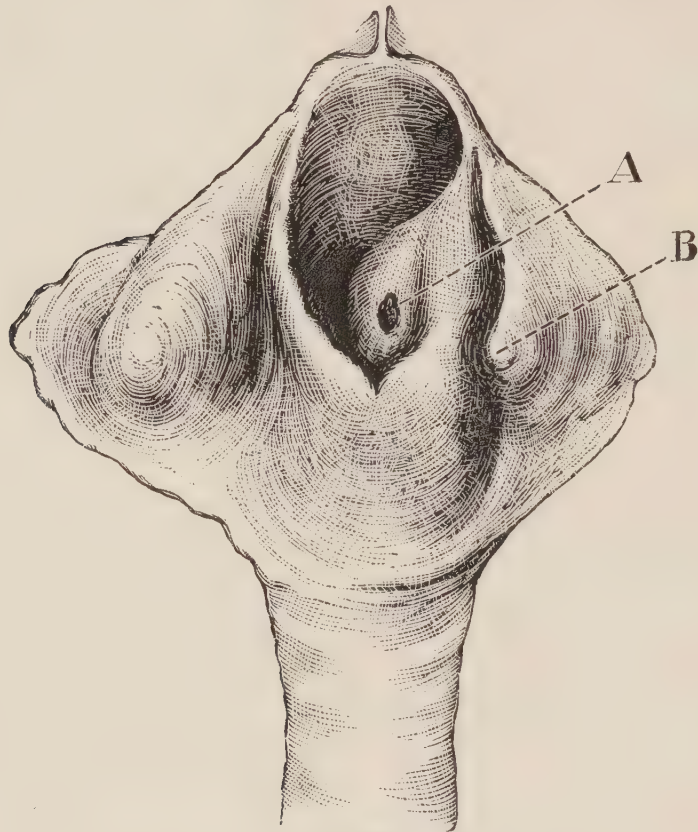


FIG. 2.

- A*—Rupture of mucous membrane where hemorrhage took place.  
*B*—Right superior cornua of thyroid cartilage turned inward by the fracture, as seen at the laryngoscopic examination.

immediately after the injury in all cases, even if there is but little displacement of the cartilaginous fragments and but slight or no indication of inflammatory swelling, œdema, and laryngeal obstruction. For, as remarks Durham: "Experience shows that delay in such cases may be emphatically dangerous. The dyspnœa may suddenly occur at any moment and without warning, and death may ensue."

This opinion is also concurred in by our worthy colleague Dr. Cohen,† by Koch,‡ and some others.

\* "A System of Surgery," vol. ii, p. 462.

† "Diseases of the Throat and Nasal Passages," p. 609, 1879.

‡ *Ann. des Mal. de l'Oreille et du Larynx*, Mai, 1879, p. 80.

The advantages to be gained from thus operating early are great.

At this stage there is a comparative freedom from engorgement of the soft parts and the distension of the vessels which ensues when dyspnœa is great ; beside, there is not that demand for haste which is necessitated when the patient is rapidly becoming asphyxiated. And lastly, in severe injuries, the chances for saving the life of the patient are greatly increased, and the exhaustion from insufficient aëration of the blood is prevented.

The objections to an immediate operation are groundless.

Tracheotomy in itself at this early stage is so comparatively free from danger, and the cases are so rare in which it is not sooner or later called for, that delaying the operation until it becomes imperatively demanded is absolutely unwarrantable.

In examining in detail those cases in which tracheotomy has failed to save life, it is almost invariably found that the patient was not seen in time by the surgeon, as in this case, or that the operation was deferred until the patient became so reduced by dyspnœa that he sank and died from exhaustion, notwithstanding that respiration was rendered free and unobstructed.

This is illustrated very clearly in cases reported by Dr. F. H. Hamilton,\* Dr. Wm. Hunt † and others.

(In Dr. Hamilton's case tracheotomy was performed thirty-eight hours after the accident, and the patient died, thirty-four hours after the operation, from exhaustion.)

It is also clearly shown that among the number of fatal cases where no operation was attempted, the majority might have been saved had an operation been performed at once, where the patient survived the immediate effects of the injury.

Two typical cases of death from neglected tracheotomy in cases of laryngeal fracture are reported by Paul Koch.

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\* *Med. Record*, January 1, 1867, p. 507, vol. i. "Fractures and Dislocations," p. 134.

† *Am. Jour. Med. Sci.*, Apr., 1866, p. 134.

One, a man, æt. 53 years, injured about the neck in a quarrel, who died two days after from suffocation which gradually increased from the time of the injury. On examination there was found a fracture of the thyroid cartilage. Another, a boy sixteen years of age, who fell from the top of his wagon on to the pole, and fractured the hyoid bone and thyroid cartilage. He lived several days but succumbed quickly to a paroxysm of dyspnœa.

The question of interest in connection with this case, is in regard to the manner in which this fracture was probably produced—whether a fall on the rounded corner of a square table was sufficient to produce it, or whether it was caused by the hand of an assailant during the act of strangling him.

Some authors consider this last method impossible. It is very rare, although it does sometimes occur.

Martin Damonette \* cites a case of a miserly old dame, who frequently ill-treated her servant. One day, the latter, driven to extremity, seized her mistress by the throat and threw her to the ground. Frightened by the fall, the servant loosed her victim, but the latter was dead. At the autopsy they found a fracture of the thyroid cartilage.

M. Maigolin reports the case of two women at the hospital being engaged in a quarrel; one of them seized her antagonist by the throat and gripped her so strongly that she broke the thyroid cartilage from its upper to its lower margin.†

This injury could not have been produced by a sharp-pointed or cutting instrument, for had it been there would have been left an external mark of the weapon used.

Was it produced by a fall on the table as stated?

Plenck reports a case of a fracture of both the thyroid and cricoid cartilages from a fall on the edge of a bucket.‡ And in Koch's case, already mentioned, the boy fractured the thyroid cartilage and hyoid bone by falling from his wagon on to the pole.

It was suggested that the fracture might have been pro-

\* *Ann. des Mal. de l'Oreille et du Larynx*, op. cit., p. 77.

† Maigolin, "Coms. de Patholog. chir.," p. 396. Hamilton, "Frac. and Disloc.," p. 134.

‡ "Malgaigne on Fracture," Paris, 1859, p. 330, trans. by Packard.

duced by a blow from a bottle, in the same manner that a round or blunt instrument will produce fracture of the skull or other bones, with but little or no injury to the soft parts. This may have been the case. If not from the hand of an assailant, but from a bottle, the corner of a table, or some blunt instrument, the *modus operandi* was the same. The force coming against the anterior portion of the thyroid cartilage, the vertebral column acting as the point of resistance, increases the force of the impinging body against the cartilage, and favors fracture of the latter.

## SWALLOWING OF THE TONGUE.\*

By E. FLETCHER INGALS, M.D.,

CHICAGO.

Mrs. J., æt. 28. I first saw this patient during a hysterical convulsion on April 21, 1880.

The convulsive attack was relieved by the inhalation of chloroform; a fair night's rest was secured, and subsequently for several days the patient gradually recovered from her nervousness and great prostration.

The history showed that for nine years the patient had been an almost constant sufferer from dyspepsia, headaches, burning and pain in back, with the other symptoms of spinal irritation (spinal anæmia), and that on several occasions the nervousness had culminated in hysterical convulsions, which had been ushered in by loss of power in the tongue and aphasia, of a few minutes' duration.

After the convulsive attack, which I was called upon to treat, the patient was given tonics—quinia or strychnia, arsenic and iron—and an effort was made to administer wine and nourishing diet, but the latter failed on account of the gastric disturbance.

Two days after the convulsion, shortly after taking some soup, there was an eructation of gas and fluid from her stomach, instantly followed by suffocation, which lasted for some time and nearly proved fatal. I was sent for, but did not see the patient until several hours later.

Three days later, a similar though less severe attack, including the eructation, occurred. In the evening of the same day a slighter attack of suffocation followed, but it was not preceded by the eructation.

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\* Read before the American Laryngological Association, session 1880.

During all this time the patient was in an exquisitely nervous condition, which was aggravated by the fear of impending death, caused by the suffocative attacks and the great prostration which followed them.

I at first supposed these attacks due to spasm of the glottis, caused by some of the ejected matter from the stomach having found its way into the larynx ; but upon careful inquiry I learned that there was no sensation of constriction or of any foreign substance in the larynx, and no cough or stridulous breathing.

The patient complained of a sense of extreme thickness of the tongue at its base, and inability to control its movements ; these sensations were usually present some time before the suffocative attack. During the attack her whole throat seemed filled, and breathing was instantly and completely checked. She stated that the tongue seemed much farther back in the mouth than it was possible to get it voluntarily, and that the tip was pressed up against the palate and seemed curled over on the surface of the tongue.

After various frantic efforts, the tongue would resume its natural position in the mouth, and respiration would again go on without impediment. For several hours after the attack, especially when lying on the back, the patient would complain of symptoms which indicated its recurrence.

Having obtained a carefully detailed statement of the symptoms, the allusion which I had noticed to this subject in Dr. J. Solis Cohen's work on diseases of the throat led me at once to a correct diagnosis.

I gave the patient a pair of forceps, and directed the friends, in case of another attack, to seize the tongue and draw it forward, unless the patient, by passing her finger over it, could accomplish the same result.

The day following the third attack, another occurred, which was at once relieved by the patient passing her finger over the tongue and drawing it forward. This was the last of these attacks ; the patient gradually improved in all her symptoms, and is now in a fair way for recovery.

Since witnessing this case I have heard of another in this city, through non-professional sources, in which the life of a man, who "swallowed his tongue," was saved by the bystanders, who promptly drew out the organ.

An abstract of the recent literature upon this subject may be found in the *American Journal of Obstetrics* for January, 1878.

As a surgical phenomenon, following division of the frenum, this accident is mentioned in Fr. S. Meissner's *Encyclopædia of the Medical Sciences* and in the *Mémoires de l'Académie des Sciences*, 1742; and Dr. Veh, of Moscow, states that he has frequently heard of swallowing the tip of the tongue after division of the frenum, which is very commonly practised in Russia. Dr. C. Hennig, of Leipzig, reports two fatal cases which he heard of in 1876, which terminated attacks of pertussis. Dr. R. Seydeler reports a case of suffocation supposed to have been caused by this accident. Drs. Roger and Simon report similar accidents which occurred while the individuals were sleeping, and Ziemssen mentions the possibility of such attacks in infants; but, so far as I can learn, my patient is the first lady on record who has ever attempted to swallow her tongue.

# THE TREATMENT OF CERTAIN FORMS OF VOCAL DISABILITY BY THE APPLICATION OF THE PRINCIPLES OF VOICE-CULTURE.\*

By S. M. LANGMAID, M. D.,

BOSTON.

I HAVE chosen the subject of this short paper for several reasons. It happens to have engaged my thoughts for some years. I have been constantly consulted in a class of cases in which it has been necessary to prove that the disability complained of was not due to disease but to misdirected physiological action. Because, also, that although much has been written explanatory of vocal phenomena, very little can be learned from books with regard to the essentials of voice-culture and the right method of restoring impaired vocal function.

The subject might have been termed, "*Something about vocal gymnastics*," and that expression may convey to some of you a clearer idea of what I have to talk about.

Let me say here that I do not propose to discuss the acoustical and physiological qualities of the human voice except in the simplest manner. The anatomy of the larynx, the action of its various muscles, the nature of sounds and the laws which govern their production, are quite well known to all of you.

The laws of acoustics and physiology have analytical, explanatory connection with our subject. The object of this paper has synthetical significance. The thing to be done is to restore what has been lost, not to account for what already exists. If the results obtained are found to answer

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\* Presented as a Candidate's Thesis to the American Laryngological Association, and published by the Council.

not only the requirements of art, but are in accordance with the known laws of physiology and the accepted theories of the nature of musical sounds, we shall have the double proof of the justness of our methods.

I yield to none in my admiration and thankfulness for the discoveries of Helmholtz and other physicists, and I regret the lack of time and ability to pay a fitting tribute to Madame Seiler for her original and priceless exposition of vocal phenomena; but I am compelled to say that, as the full powers of the human voice were exhibited many years before such discoveries were made, it is more than likely that the methods of voice-production may be formulated without the help of the laryngoscope or the application of what is known of the laws of sound. That we are not without guides to such methods I shall show further on.

To enable the singer to regain lost tones; to teach the beginner to produce each note of the scale in such a manner that the vocal organs shall receive no injury but rather gain strength by continued practice; to correct a vicious production, such as has already impaired the organs and must necessarily result in the annihilation of the singing voice, some method must be known which does not necessitate a knowledge of physiology or the laryngoscopic appearances of the glottis, on the part of singer or teacher.

That there is need of such information, I think all laryngologists will admit. My own experience, as briefly given in the cases about to be narrated, leaves no room for doubt of its value for those who use the throat, and for those who would treat its diseases and disabilities.

How diverse and conflicting published opinions are with regard to the proper method of vocalization, your own reading has shown you.

One teacher says: "Sing upon the breath" (whatever that may mean); another, "Sing and feel no parts." One instructor advocates the glottis stroke, but another asserts that the *coup de glotte* will surely weaken and destroy the vocal organ. One physiologist affirms that the larynx rises for every note of the scale, but another says it descends for all notes above a certain pitch. Some say that the produc-

tion of the vowel is based upon the action of the consonant-articulating organs, the name of such production being "exploded vocality." On the other hand, it is asserted that the ineffectiveness of the singing voice in certain countries results from the multiplicity of consonants in the spoken language, the result being a weakening of the true laryngeal action. These are but a few of the various opinions which are to be met with in treatises on the physiology and hygiene of the singing voice.

Where then shall we look for that which shall prove beyond contradiction what may be considered to be a true way of producing musical tones?

I know of but two sources of such information, viz.: great singers, and such teachers as have proved, by the results of their labors, that they can cultivate the singing voice to the extent of its full development and lasting integrity in any individual case.

Information which I have obtained from personal intimacy with exceptionally fine singers, and the scrutiny which I have given to the methods of all those whose public or private efforts I have witnessed, have led to this conclusion, viz.: *that the means used by all successful vocal artists are identical*; the variations in result correspond with the varying success or manner of application of these factors, such success being influenced by the physical conformation of the artist, his musical aptitude or cultivation. [I may be pardoned for saying that my own artistic experience confirms my belief in the truth of this position.]

The question which interested us is *how to use the instrument by which the singing or speaking voice is produced*. The instrument exists, so wondrously constructed, capable of such varied functions that the human mind has as yet been unable to completely analyze its modes of action, and yet it is so perfectly adapted to the end for which it was made, that the possessor, no matter how uneducated, may play upon it for the wonder and gratification of the whole world, provided only that he is endowed with the still more wonderful gift of musical inspiration.

The instrument of which we speak consists of three or

more grand parts. The *larynx* with its so-called vocal cords capable of instigating sounding vibrations. The *lungs*, the cavities containing the air to be set in motion to produce the sounding vibrations. The *respiratory muscles* or levers for applying force to the parts to be set in motion. The *bronchial tubes*, the *trachea*, *pharynx*, *nasal cavities*, and the *bones of the head*, which act as resonators and reflectors.

Each of these factors must be so perfectly used as in their combination to produce all the effects of which the voice is capable.

Defects and shortcomings in vocalization may result from the wrong employment of any or all of these parts.

1st. If the larynx is forced or allowed to remain in such positions as render the efforts of the glottis to produce the desired tones inoperative, except by some complementary wrong action, the result will be, sooner or later, loss of those particular tones. If the muscles which control the position of the larynx and glottis-opening are not used in their integrity, the resulting tone will have a corresponding deficiency.

2d. If the reservoir of air to be set in motion is not allowed to act to its full capacity, the effect will be to lessen the amount of the real sound producer in the column of air.

3d. If the respiratory muscles are not used to the greatest advantage, the result will be that which is always obtained by too short leverage.

4th. If the reflectors are not made to vibrate, the greatest leverage or blast may be employed, with the vocal cords in the necessary position for any particular note of the scale, and the resulting tone will be inaudible at a greater or less distance.

To name the acts necessary for the production of tone, is to formulate the defects and disabilities of the singer.

The perfection of mechanism would be: The larynx immovably fixed in its vertical and longitudinal position for the production of any given note of the scale of that particular voice; the lungs and their continuations in such

condition as would allow them to contain the necessary amount of air to be used in the particular vocal effect desired; the respiratory muscles acting in such a way as to render the leverage perfectly adjustable to the amount of action desired; the column of air, of a certain vertical and longitudinal size, vibrating through given dimensions, must be made to impinge upon the necessary reflectors, and from them to be delivered to the mass of outer air to give rise to sound-conveying waves.

One source of error for the singer and the scientific observer also exists in the wonderful compensating ability of the vocal instrument. Wrong action of one part is compensated for by increased or modified action of other parts, and the resulting imperfect or wrong mechanism is frequently mistaken for the normal one, the progressively destroying effect of which is not seldom discovered, when, unfortunately, wrong scientific theories have been published, or the disabled organ has lost its pleasure-giving or money-gaining attributes. Of the action of some of the parts concerned in vocalization, I shall have almost nothing to say, because much has been already accurately written about them. I must, however, emphasize the mechanism of other parts because they are more frequently disused, and because the substitution of compensating action is less easily detected.

First, I shall speak of the position which the larynx assumes during the singing of the scale, from below upward. What is true of one kind of voice is true of all, since the form of the singing organ is the same for all species of voices; the only variation is in dimension. The same mechanism pertains to all; the direction of the movements must therefore be the same.

There are no muscles peculiar to the soprano larynx,—none which do not exist in the bass organ also.

The nerves are the same. The situation and gross form of the organ are the same in all voices. The only modification is that the smaller instrument is fitted to produce higher-pitched and more slender vocal effects. So true is this, that the observer who has carefully noticed the external

and internal outlines of the singing organs can pronounce with certainty upon the kind of voice for which any organ is adapted.

Here I must state that the notes throughout the scale can be produced in two ways, viz.: by force of blast or by muscular adjustment. This fact cannot be too strongly emphasized.

Many of the most erroneous deductions have been based upon the fact that the successive notes of the scale can be produced by force of blast alone. Those who have experimented with the dead larynx have, all of them, so far as I know, formulated wrong doctrines as to what the action of the living larynx should be. The fact is that the extrinsic and intrinsic muscles of the larynx are quite capable of effecting all the changes in position necessary to produce all the notes of any voice.

The proof is at hand, and can be supplied by any singer among you. Fix upon a note of definite pitch and then think of any note above it. A movement will be felt in the throat which is the adjustment of the larynx. Preserve that new position ; give the slightest impulse by the breath, just enough to set the cords in vibration, and the pitch of the note will correspond with the note which was predetermined by the mind. The accuracy will be in proportion to the cultivation of the singing voice.

Think for a moment how direct and simple this method is, compared to that which calls for an increased force of blast for every higher note. Who could accurately measure beforehand the exact quantity of breath necessary to produce not only the thirty-six or more notes comprising the compass of good voices, but the great number of inharmonic divisions between these tones? And yet this is the very method which is frequently taught, and is the means usually adopted by the untrained singer to enlarge the compass of the voice. From substitution of force of blast for normal muscular adjustment, arises much of the disappointment to which most of those who employ it are doomed.

Another point claims close attention. Nothing can be more unprolific of good results than the directions to " Sing

and feel no parts," or, as some direct, "Sing out, sing out." As well tell the cornet player to play out. The successful singer would say, "Feel all the parts," for through sensation comes knowledge of what is being done. Rather sing in, viz., use the reflectors. Place an india-rubber head over the larynx and what sort of a tone would come from it? Every one admits the value of the hard structure of the head as a voice intensifier, but nowhere does one find in books definite rules for the use of those bony reflectors and cavities. To be sure, it is casually mentioned by one writer that the lower base notes get an increased resonance by being sung in the nose, and another says that the head tones are so-called because they seem to be produced in the head; but I believe that no one could obtain information from such statements which would direct to the philosophical and artistic use of the reflectors. The fact is that the proper use of the reflectors is quite as necessary as that of any portion of the instrument; their non-use is equivalent to the removal of the pavilion of any brass instrument. How to use them is a part of the unwritten law of the art of singing. How they are used by successful singers may be learned from listening to Campanini, and was to be witnessed in the perfect method of Mad. Titiens. It is sufficient to say that every vibration of the glottis must find its corresponding vibration of a reflector, and any note which is emitted without being so reflected will be deficient in one or more vital qualities. The physicist will explain the nature of these deficiencies by means of analytical instruments; the singer has only sensation for his guide.

A few words with respect to the employment of a vibrating column of air of more or less definite vertical length, and I will briefly relate a few cases which exemplify what has already been said.

If the scale is sung from below upward with full tone it will be noticed that a kind of vibratory thrill is experienced in the region of the sternum. With the low tones the situation of the vibration is lower than with the higher tones, but it can be experienced even with the notes above the staff in the tenor and soprano voices. This I believe is

caused by the vibration of a column of air below the glottis, and as its position is largely under the control of the will, I believe that sensation may be used to regulate the dimensions of the column of air to be used under any circumstances of pitch or volume of tone.

One word more with regard to registers, so called, at certain notes of the scale. In all species of voice, changes of quality of tone are noticed. The groups of notes which are all of one quality, are called registers. It may be said, however, that the better the voice, the less noticeable are these differences of tone. These changes in quality of tone are, I believe, due to two causes: changes in position of the larynx and variations in reflection. The register called "falsetto" is due, in my opinion, to an abnormal, imperfect use of the extrinsic and intrinsic laryngeal muscles. The tones are as abnormal in quality and power as the mechanism is imperfect which produces them. Such tones are never to be cultivated in the male or female voice. To cultivate them is equivalent to the deliberate manufacture of an imperfect musical instrument.

In the following case, the above principles found their application for the restoration of the voice. This first case, and each of the others, may be considered as a type, and of many similar.

CASE 1.—Miss A——, 16 years old, a strong healthy girl, had formerly an excellent voice of large compass. She is very ambitious and intends to become an operatic artist. She has received vocal instruction during six months from an Italian teacher, a graduate of a foreign conservatory. She has lately noticed that the tones above Fa on the staff were sung with increased difficulty, and that attempts to sing were followed by aching of the throat. Parents, teacher and pupil were alike discouraged. Upon hearing the scale sung it was evident that the attempt to sing the notes above the staff was attended by a straining of the pharyngeal muscles, caused by the endeavor to sing the group of notes above the staff with the laryngeal adjustment proper for the notes below. She was told to allow the larynx to rise, and to sing the note from the new laryngeal position. Instantly, all feeling of effort disappeared, and these upper notes became, after some

months, so easy in their production, and so beautiful that she was advised by an impresario to fit herself for the stage as quickly as possible, for such tones were rarely heard in Europe.

The fault in this case was that the vertical position of the larynx did not correspond to the longitudinal position.

CASE 2.—Miss H. A. Has a voice of beautiful quality which she formerly used for her own gratification and that of her friends. Began to receive instruction in singing two years ago ; was taught a very definite method, but at the end of the year such weakness of tone was experienced at the note D. on the staff and on all above, that she ceased to sing. After some months she became the pupil of another teacher who advised her to consult me for what seemed to be a "sort of paralysis of some throat muscles." The weakness in this case was due to the cultivation of the falsetto production on the note D., a production which, from its seeming ease and resulting flutey quality of tone, is a most seductive one. A few minutes' instruction in the manner of raising the larynx and applying the necessary amount of tension was enough to remove not only the feeling of weakness of the throat, but to inaugurate a way which simply needed practice to insure continually increasing power and vitality of tone. One characteristic of the cultivation of the falsetto tone is the inability to cause it to gain in power ; it remains forever incapable of translating any emotion except that of weakness.

CASE 3.—Mr. W., a tenor singer with a voice of nearly three octaves, complained of frequently disabled throat from attempts at singing, and lately of almost constant slight hoarseness. He was a man of powerful frame, with breathing capacity much greater than common.

The pharynx was congested, the vocal cords somewhat reddened, and pains were complained of in the region of the pillars of the fauces, and aching in the larynx, at times.

It was found that two great defects existed in the production of tone in this case :

The upper tones were obtained by force of blast, and the reflection of tone was a matter of accident.

Misdirected force was used not only to *obtain* the notes, but also to increase their power. The physical strength of the patient enabled him to get by main force what should have been obtained

by nicely adjusted exercise of power, and the result was in proportion to the singer's ability to wrongly and continuously apply this strength.

Complete disuse of the singing voice was enjoined. The congestion of the mucous membrane was treated by the application of various stimulants and astringents, and the return to a healthy condition was not long delayed. A few exercises were given with the object of securing the proper action of the laryngeal muscles (such as a quick reflection of every tone, singing with closed mouth, articulating the vowel by causing it to follow quickly after labial consonants, and insisting that every note of the scale should be produced with exactly the same force of breath).

The result was all that could be desired. The throat has remained well for several years.

The number of cases is large in which suggestions as to the natural use of the voice (and the natural is the artistic) have not only enabled the singer to increase its power, and beauty, and compass, but have caused also the disappearance of pathological conditions, such as congestions of the pharynx, swelling of the membrane covering the arytenoids, congestion of the cords, and physical discomforts of various kinds.

## NASAL POLYPS.\*

By W. H. DALY, M.D.,

PITTSBURGH.

NEOPLASMS of this character are the product of the nasal mucous membrane under certain morbid conditions, usually that of catarrh, yet cases occur where there is no apparent inflammatory or irritative cause whatever.

It is not the purpose of this paper to discuss the pathology of these growths, however interesting, but simply to give the notes of a few cases, some comments upon them, and a brief outline of treatment for their removal and the prevention of their return.

I have noticed that the largest percentage of these growths belongs to the myxomata; the next in frequency are the fibromata.

There is a tendency in polyps of the former type to change with age into the latter, beginning in the pedicle with a growth of fibrous tissue, and extending throughout the substance of the tumor.

As to the localities most predisposed to their formation and growth, Cohen has observed that the myxomatous polyp is "most frequently attached to the superior turbinated bone, less frequently to the middle, and rarely to the inferior one."

Carl Michel has found them growing from the middle turbinated bone in far the most cases, and especially from its anterior end.

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At least two-thirds of the cases under my own observation have been polyps of the middle turbinated bones, in some part of their extent.

One of their distinctive characteristics is a tendency to repullulation, unless the mucous membrane from which they grow is entirely destroyed, or altered into a healthy tone.

Recurrence again and again does not seem to render them liable to assume a carcinomatous form.

A narration of the following cases will tend to corroborate this statement :

CASE 1. Mr. A. K., merchant, æt. 52 years, was sent to me by Dr. R. S. Sutton, of Pittsburgh, for treatment, on 14th April, 1879. The doctor had removed large myxomatous polyps from the left nasal cavity of this patient at different times during the past nine or ten years. He had also removed several small sessile polyps from the right nasal cavity. Examination of the nares by reflected light from a McKenzie lamp, disclosed the left nasal cavity blocked up anteriorly by a polyp, and with the aid of the rhinoscopic mirror I found the mass completely filling the post-nasal space of the left side also, and partially concealing from view the Eustachian orifice.

In the right side, growing from the middle turbinated bone, posteriorly, was a gelatinous polyp, the size of a small chestnut, which, acting like a valve, permitted partial inspiration, but no expiration whatever.

I also found several small sessile polyps, growing from the anterior end of the middle turbinated bone.

The mucous membrane of the nares, wherever seen, and the pharyngeal walls and pillars of the half arches were swollen, irritable and hyperæmic.

A periodical fit of sneezing occurred every morning, followed by exhaustion and headache.

The breathing was of an asthmatic character, a condition from which he suffered when the polyps became large and obstructive to nasal respiration, but at no other time.

Here was a case of recurring nasal polyp, multiple in character, with chronic naso-pharyngeal catarrh, which seemed to me well calculated to test the benefit of electrolytic treatment.

I accordingly employed it at several sittings, with but partially

satisfactory results. The growths were visibly reduced at each sitting, but in a few days they were apparently as large as ever.

I then resorted to the galvano-cautery, and after thoroughly removing the growths with the forceps and loop, I carefully cauterized their bases, and dismissed the patient with both nasal cavities free, and capable of maintaining respiration.

In this operation I was kindly assisted by Dr. William Wallace, of Pittsburgh.

The patient went to his home, about twelve miles distant, with instructions to apply cold damp towels to his face in case pain should supervene, and to snuff alum water into the nose in case of hemorrhage.

The next morning I was summoned to visit the patient, with all dispatch, and found him suffering intense agony. He had slept none since the operation.

Upon examination I found but little swelling in the nasopharynx, but the pharyngeal walls were extremely irritable, and the patient's face appeared swollen.

Pain was chiefly referred to the right side of the head, extending into the middle ear.

I carefully examined the pharynx about the Eustachian opening of that side, but could detect no more evidence of inflammation than upon the other side. Inspection of the right external auditory canal revealed the membrane of the tympanum red, tense, and the surrounding walls much inflamed.

An anodyne was administered, with instructions to renew the wet applications, at a temperature most agreeable to the patient, to drop a warm solution of bicarbonate of soda into the ear at intervals, and make use of inhalations of steam into the pharynx through the nose.

Two days later the pain had but slightly abated, and the patient, a powerful man, capable of much endurance, was quite exhausted, and in a critical condition. The heart's action was interrupted every third or ninth pulsation. His face was haggard and worn, and he had suffered from loss of sleep.

Inspection of the auditory canal, with strongly-reflected light, disclosed pus upon the lower segment of the inner surface of the membrana tympani, like a hypopyon behind the cornea.

While performing paracentesis tympani (which I did without informing the patient) it unfortunately happened (because of a sudden movement on his part) that, instead of perforating the mem-

brane, I struck one of the auditory bones, breaking the point of my Gruber lance, and leaving the fragment sticking in the bone.

Changing the instrument and puncturing the membrane caused the patient much suffering.

With Siegle's suction speculum, about one-quarter of a drachm of pus was extracted through the opening from the middle ear, which was followed by immediate relief.

The ear was now syringed with warm soda-water, and the point of the lance removed from the bone. In six weeks the patient was well, his hearing quite restored, and his sense of smell, to a great extent, recovered, though he had a booming noise in his head, and a sensation "as though houses were falling down about him." In two months this passed away, and he was quite comfortable. His fear of the battery was so confirmed that he declined to permit me to again use it upon the bases of the polyps, which had a disposition to repullulate.

He passed from my observation for a time, but after a period of eleven months I removed a small polyp from his left nasal cavity. He is now much improved, and as the catarrhal condition of the naso-pharynx is being treated, he can, with a fair degree of certainty, expect to be permanently relieved of his polyps.\*

*Comments.*—This case shows the importance of caution in the use of the galvano-cautery in the nasal cavities, and the liability to the production of serious ear complications. This accident is rare, in so far as I have been able to ascertain from others who have been in the habit of employing this method of treatment.

Carl Michel, who is very partial to its use, does not speak of a single case similar to the one above noted, and other specialists, with whom I have spoken, have informed me of no similar accident. The lesson it teaches is, however, noteworthy.

This case for a time presented so many similar features to the one recorded by Dr. Roosa in his work on diseases of the

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\* March 10, 1881, about two years later. This patient has been kept under occasional observation, and a careful examination, three days ago, has failed to reveal any polyps; the fits of sneezing have not recurred; the asthmatic symptoms have not reappeared, and there has been uniformly free nasal respiration. The case is practically cured.

ear, page 292, second edition, viz.: a case of otitis media purulenta, with pyæmia, which occurred in the person of a clergyman-patient of his, that I was exceedingly anxious lest a similar train of symptoms might follow, and threaten the life of my patient.

With this apprehension, I divided through the membrane freely, and removed the pus. To this prompt action I attribute the prevention of serious injury to the function of hearing and the avoidance of more serious consequences.

CASE 2.—J. E. R., a young clergyman, consulted me in March, 1879. His nasal obstruction was so great as to have compelled him to abandon preaching for a time. Polyps had been removed from his nose on previous occasions, but his condition had never been so distressing as at present. He also suffered from asthmatic symptoms.

Inspection revealed a large polyp almost protruding from the right nasal cavity anteriorly, and blocking up the entire pharyngeal vault, rendering inspection with the rhinal mirror impossible, but by means of palpation it could be felt as a continuous mass.

The left nasal cavity was very narrow and the septum much incurvated from pressure of the polyp and congenital deformity, but when dilated by the Elsberg speculum a contracted mass could be seen. This was movable by making traction on the polyp in the other nasal cavity, proving the growth to be from the same pedicle, and to consist of a process of the same tumor.

After some preparatory treatment, this patient, who was timid, nervous, and much exhausted from hard parochial work and inability to procure rest, was operated upon upon the same day as the previous case, the entire mass being removed at a sitting.

The operation lasted more than an hour, and was attended with considerable loss of blood.

The galvano-cautery was then used upon the base of the growth, which sprung from the middle turbinated bone of right nasal cavity, in almost its entire length, by a flattened pedicle.

The cauterization in this case was more prolonged and severe than in the previous one, yet scarcely an untoward symptom followed, and in a short time he was able to resume his duties in the pulpit. His sense of smell returned in a great measure.

An examination of this case a year after the operation, reveals no presence of polyp, and the nasal respiration is free but for

slight obstruction by the congenital incurvation of the nasal septum in the left nasal cavity.

*Comments.*—This patient had suffered much maltreatment at the hands of quack catarrh doctors and friends, and had used the many douches and snuffs for the relief of catarrh.

He had also suffered a very respectable medical man to tear the mucous membrane from his nasal septum in searching for the polyp.

CASE 3.—Mr. R. J. L., age 44, glass manufacturer, has suffered with polyp since 1866.

During the summer of that year, was much annoyed by attacks of sneezing, which sometimes continued until he was exhausted. He had also difficulty when eating and drinking, from his inability to breathe through his nose. His family history is good.

He has been treated by a number of physicians, both regular and irregular, some of the former of excellent reputation and undoubted skill, and polyps have been removed from his nasal cavities so often that he has grown to consider himself quite an authority and critic in all the operative procedures connected therewith.

On the same day with the two foregoing cases, I removed a large firm semi-fibrous polyp, the size of a flattened hickory nut, from his left nasal cavity.

I also removed three smaller ones from the right nasal cavity, which were growing from the superior turbinated bones, at posterior end, and two growing from the inferior turbinated bone, having wide fan-like bases, Dr. R. S. Sutton, of Pittsburgh, kindly assisting me.

Considerable hemorrhage attended the removal of these growths, which was arrested by the use of the galvano-cautery and application of alum solution, and the patient allowed to go to his home, a distance of 40 miles, immediately after the operation.

Subsequent treatment, once in every 8 or 10 days, completed the cure of the rhinitis. His sense of smell, in a great measure, was gradually restored; one year later, there is no return of the polyps, and the gentleman sends his daughter for treatment of similar growths.

*Comments.*—This case exhibits the most favorable results that can be attained in the treatment of polyps of the nasal cavity.

This patient had also, on one occasion, a mass of mucous membrane and bone torn by force from his nasal cavity by a physician who, operating on his polyp, caught one of the turbinated processes, imagining he had hold of the tumor, and notwithstanding the protestations of the patient, he wrenched away a piece of the bone that was in no way involved in the growth.

This experience caused him to suffer his ills for more than two years rather than seek further advice, and furnished another of the many examples of a form of surgery that is too often the subject of malpractice by well-meaning and skilful men who, however, have not provided themselves with the proper facilities for operating, or who have not sufficiently familiarized themselves with the anatomy of the parts.

It may appear a simple matter to wrench a polyp from its base when in open view, but the removal of one, from a nervous patient, which is deeply seated in the interior nares, in a safe and creditable manner, requires delicate and tactile fingers, and even a more accomplished education of them than is required for the delicate operations on the eye. Besides the coördinative action which is necessary in operating with an artificially reflected light, all the attending annoyances of a bleeding, coughing, sneezing, flinching patient, harass one's patience and test one's perseverance and manipulative skill.

CASE 4.—C. H., æt. 26. Had suffered from naso-pharyngeal catarrh for 8 years, and probably during his lifetime.

Like most persons so afflicted, he had resorted to the usual snuffs and douches. He was unfamiliar with the sensation of breathing through his nose.

He consulted me regarding an attack of follicular tonsillitis, whereupon, making a thorough examination of his upper air-passages, I discovered two hard fibro-cartilaginous polyps growing from the anterior extremity of the middle turbinated bones, each about the size of a small chestnut.

After relieving the acute disease, and a course of preparatory treatment, these were destroyed by means of the galvano-cautery, on the *same* day that the three foregoing cases were operated upon.

The patient recovered free nasal respiration and much improvement in general health, but going on a visit to his parents in London prevented final treatment and cure of his catarrh.

There is, however, no return of polyps a year after date of operation.

CASE 5.—Miss A. F. H., teacher, æt. 24 years. Had suffered from nasal obstruction and dulness of hearing for over 9 months, and thinking she had cold in her head, had resorted to the foot-bath and internal remedies, as well as the various snuffs advertised for catarrh.

These latter caused her intense headache, and on the 29th of June, 1879, she consulted me, believing that "there must be a growth far back in some part of her nasal passages."

An examination with the rhinal mirror revealed a hypertrophied condition of the mucous membrane, covering the posterior ends of the turbinated bones, not amounting altogether to polyps, but much resembling them.

There was also much thickening of the mucous membrane about the rim of the Eustachian tube and roof of pharynx.

An anterior inspection also showed that the obstruction extended well forward, and the expression of her countenance, naturally bright, was stupid and fatigued.

The application of some simple absorbents for a few days, and the education of the nasal and pharyngeal walls by means of the introduction of Wagner's bougies, which at first use caused violent sneezing, at length prepared the patient for treatment by the galvano-cautery.

Three sittings, at intervals of ten days, were required to reduce the parts.

Unfortunately, in the last operation, the heated electrode came in contact with the Eustachian orifice, and caused some otitis media, prolonging her suffering beyond what it should have been. But the ultimate result was a dismissal of the case with entire freeness of nasal respiration and a great improvement in hearing.

CASE 6.—Miss A. M. E., æt. 16 years, of delicate constitution, was under treatment of Dr. E. Dyer, of Pittsburgh, for deafness,

and as but little impression could be made upon the case by remedies directed to the ears, he requested me to examine her throat, giving his opinion that the otitis media, which had caused the intractable deafness, had originated in the naso-pharynx.

May 13, 1879. I made an inspection of these parts, which revealed adenoid sessile growths, of the size of a grain of wheat, to that of a split pea, thickly studding the post-pharyngeal wall at the upper portion. These neoplasms were of dense hard fibrous texture.

In the region of the Eustachian orifice and posterior nares these growths were pediculated or polypoid in form. The naso-pharynx and larynx were the seat of much hyperæmia, and extremely sensitive and intolerant of any manipulative measures.

Power of hearing at first examination by the watch at left ear was two inches. By the right ear the watch was heard at four inches.

This case was treated by the gentlest electrolysis, at intervals of one week, for three months, when the patient having become accustomed to the presence of instruments in the naso-pharynx, I attacked the growth with the galvano-cautery, and more rapid absorption followed, while her general health and also her hearing improved.

Upon a test of her hearing power by Dr. Dyer and myself in March, eleven months after the first test, we found the left ear had a hearing distance with the same watch of four inches, and the right ear, of eight inches, each ear doubling its hearing distance; and the throat and posterior nares now presented a smooth appearance, with no cicatrices whatever remaining; her physical development good, and her general health excellent.

CASE 7.—C. H., æt. 21, clerk. Has never been able to breathe through his nose, to any extent, especially in the winter, and had long ceased to think this organ was any manner of use as an air-passage or organ of smell.

He believed himself to be suffering from catarrh, and, as usual, had among his toilet articles a "Thudicum nasal douche," and supply of catarrh snuffs, all of which he used and abandoned at times. He assured himself by way of consolation "that he had never heard of a case of catarrh being cured."

With these convictions he consulted me March 8, 1880.

The larynx and pharynx were intensely hyperæmic, and of a dark copper hue. A thick veneering of glazed mucus covered

the post-pharyngeal wall. His expression of face was stupid and frog-like ; his eyes were dull, heavy and watery ; his speech was muffled, and of that character we term nasal.

Pharyngeal inspection, by means of the mirror, was impossible, from enlarged tonsils and irritable fauces. Anterior inspection revealed a polyp, the size of a chestnut, blocking up the nasal passage of left side. This was removed at once, but not entire, owing to its friability. Three others were removed entire, which I here show you ; two about the size of a chicken's heart, and one of them much that shape.

They are rather typical specimens, and have, from their great age, become firm and fibrous. They are now much shrunken from the action of the alcohol.

Five in all were removed from the left nostril, these three being removed by the loop, without destroying their entirety. A number were removed from the right nostril, and some festoon-like growths, of a hard, fibrous nature, were also removed from the vault of the pharynx, at one sitting, which lasted nearly an hour, and was accompanied with much hemorrhage.

At a subsequent sitting, I removed a pendent post-nasal tonsil, and at the date of this writing (April 1) I removed three smaller polyps from the superior turbinated bone of the right nasal passage.

Manipulation of this case was rendered difficult, from an incurvated nasal septum, and large turbinated processes projecting into the nares.

This patient's delight at being able to breathe through his nose was very marked. His expression of face has changed, and the inflamed condition of the mucous membrane of the naso-pharynx is rapidly improving under daily use of mild and sorbefacient local applications.

I have taken these cases from my note-book, probably the most typical ones under treatment during the past year ; many others present minor points of interest ; though they do not merit special report, yet some of their peculiarities might be mentioned, *e. g.* :

CASE 8.—I. H. B., an attorney of this city, who presented himself for treatment of catarrh and polyp of posterior end of inferior turbinated bone of left side. Described so well the size and

location of his polyp, that I was induced to inquire *how* he was so well informed. He told me "he could feel it with the end of his tongue." Upon my expressing some doubt on the subject, he opened his mouth and demonstrated to me that he could retract his tongue, elevate the tip, and slip the entire organ up behind the velum pendulum palati, into the vault of the pharynx.

This extraordinary feat he could accomplish in the "twinkling of an eye." If any one doubts the difficulty of accomplishing this, a trial will convince that it is not an easy matter. In answer to my query he stated "that, while travelling in a railroad car, about three years before, he was more than usually annoyed by a dryness in the upper region of the velum and posterior nares, and making repeated efforts to reach the parts with his tongue, his velum and palate being relaxed, he finally felt something 'give way' under his tongue, as it slipped suddenly into the upper vault of the pharynx."

He was much alarmed at first, and found some difficulty in extricating it, but the act had removed the inspissated mucus, and he was emboldened to try it again, and has since practised it when the parts felt dry.

This form of autopalpation had given him a very correct notion of the anatomy of the parts, both normal and pathological. The habit had not, apparently, done any particular harm except to lessen the tone or contractibility of the muscles of the velum pendulum palati.

*General Remarks.*—In operations for the removal of polyps, or the reduction of growths in the retro-nasal region, either by means of the loop, forceps, or galvano-cautery, the tip of the index finger should be held in the vault of the pharynx as a guide. With it there, the operator can adjust the loop, or guide the forceps, and engage the growth within their grasp. He can also place the point of the cautery electrode wherever he wishes it, then, withdrawing the finger into the lower pharynx, out of danger of being burned, close the current as long as it is safe at a time, which should always be brief, with longer intervals to allow cooling.

Then inspect again the parts, and renew the burning, if necessary, until sufficient destruction of the growths or their pedicles has been accomplished.

The operator should employ the index finger of his *left* hand as guide in the *left* side of the patient's pharyngeal vault, instructing the patient to lean a little forward and press against the operator's finger. By this means, the patient's head is held firm, and sufficient force can be used to overcome the expulsive action of the levator palati muscles, which soon give way, and the tip of the finger is brought directly to the pharyngeal orifices of the posterior nares, while with the right hand the loop-handle, the forceps or the electrode can be guided with certainty into any of the fossæ of the nasal cavity.

In operating in the patient's right naso-pharynx, the index finger of the operator's right hand should be used as the guide in the same manner as detailed above.

This plan gives many advantages in operating, as the index finger in the retro-nasal opening is a certain guide and director, as well as an efficient protection to the Eustachian orifices and septum nasi.

I dwell on these points, because little is said in the books upon this plan of operating; a trial of it will convince the surgeon of its usefulness.

After removal of polyps, the patient should be kept upon treatment, and the nares carefully inspected at intervals of three days at least, and the milder cleansing applications should be daily used by the patient himself. Any regrowths should be at once destroyed, and their bases cauterized.

Any of the stronger purgative mineral waters, as the Carlsbad, Hunyadi Janos, or Ofner Rakoczy, are useful during this treatment to allay tendency to inflammatory febrile action.

Nothing less than a relief of the catarrhal condition of the nasal mucous membrane will ensure immunity from a return of the growths, and the patient must receive proper medical and local treatment for this purpose.

## THE PATHOLOGY AND SURGICAL TREATMENT OF HYPERTROPHIC NASAL CATARRH.\*

By WILLIAM C. JARVIS, M. D.,

NEW YORK.

**I**N my endeavor to find a simple method for the relief of the exceedingly annoying symptoms caused by the presence of hypertrophied tissues in the chronic form of nasal catarrh, I have had constructed a wire-snare *écraseur*, and have been so much encouraged by the success attending its use, that I now venture to present it to the Association, in connection with other instruments devised by myself to facilitate the operation. Before proceeding with the description of the method made use of for the cure of hypertrophic nasal catarrh, I desire to refer to the indications justifying surgical interference. From observations made at the extensive throat clinic of Bellevue Hospital, I have been led to the conclusion that chronic nasal catarrh, before it has lapsed into the atrophic form, is invariably accompanied by a pathological condition consisting in some form of hypertrophy of the intranasal tissues.

This hypertrophy, though slight in the recent stage of the catarrhal affection, steadily increases with a rapidity depending upon the degree of irritation and congestion to which the nasal mucous membrane is subjected, until, as sometimes happens, the nasal tissues will be found to have become enlarged to such an extent as to completely block up the posterior nares, and even to encroach very considerably upon the naso-pharyngeal space.

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\* Presented as a Candidate's Thesis to the American Laryngological Association, session 1880, and published by the Council.

Owing to their inferior position, *the tissues over the lower turbinate become more hypertrophied than those over the other bones.* (Fig. 1.)

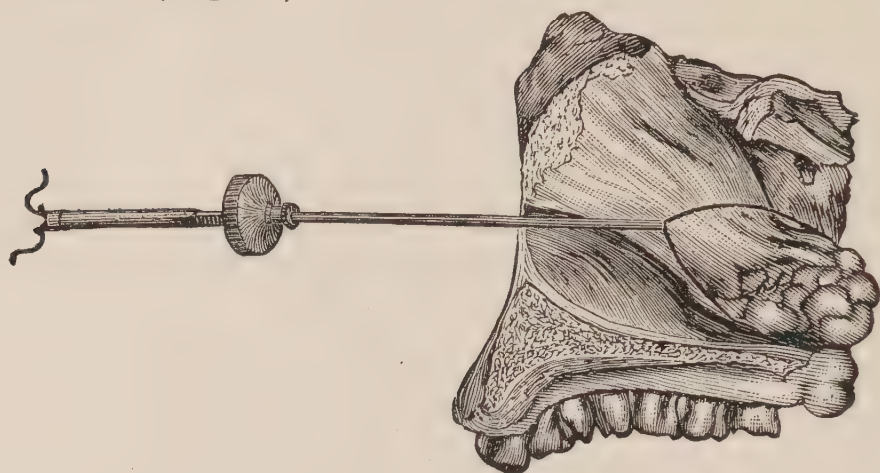


FIG. 1.

Drawing from a pathological specimen in possession of author showing post-inferior turbinate hypertrophy, with wire snare in position.

Indeed, so great is this tendency of the inferior turbinated to become hypertrophied, that I have been induced to adopt the rule of looking for an increase in its dimensions as an indication of the extent and chronicity of the disease. This peculiarity, I think, may be in part accounted for, if we consider some of the many forms of irritation to which the lower turbinates are subjected, viz.: inhalation of vapors, dust and gases; exposure to an alternately high and low, or continuous low temperature; but, more especially, the action of acrid nasal secretions collected about and retained in contact with their surfaces; on account of the obstruction in the nares, the removal of this secretion is rendered extremely difficult, or even impossible, as the means usually made use of for that purpose, that of forced inspiration and expiration, cannot here be brought into play. Hence a slight amount of hypertrophy of the tissues over this bone is often met with, when there is no perceptible increase in the size of the others.

*Hypertrophy of the tissues over the posterior portions of the turbinated bones is more frequently met with than any of the other forms of hypertrophy.* (Fig. 1.)

Posterior turbinated hypertrophy is of such common occurrence that I have been forced to recognize it as a

distinct peculiarity of the disease, especially when it is connected with enlargement of the inferior turbinate. It is more frequently found standing alone, in the summer than in the winter months. The common occurrence of this form of hypertrophy may be in part accounted for, if we take into consideration the looseness of the mucous folds over the inner portions of the turbinated bones, and the thinness of these folds toward their anterior extremities. Such an anatomical arrangement would favor extensive posterior hypertrophy, but would militate against the occurrence of the anterior form. Another anatomical difference, that of the blood supply, will also help to explain the condition, for it has been conclusively demonstrated that the most numerous venous spaces are to be found in the inner portions of the turbinated bones, and that the blood-vessels passing to their posterior borders are larger, and exceed in number those running anteriorly. Occasionally, however, the tissues over the anterior parts of the turbinated bones will be found to be hypertrophied to a considerable extent, whilst the deeper portions are but slightly affected. I have, therefore, divided hypertrophy of the tissues over the turbinated bones into two varieties: *anterior and posterior hypertrophy*.

As the surgical treatment of each variety is different, the division will be found a convenient one. In making this distinction between the two forms of hypertrophy, I do not desire to convey the impression that I recognize the anterior and posterior varieties as being absolutely independent of each other; this would, of course, from the direct continuity of their tissue, be impossible, but I wish to be understood as taking advantage of the opportunity offered of making this division, through the excess in growth of one part of a turbinated bone over another portion of its own substance. Hence, it may, in a number of instances, prove a relative one; the variations, however, in these cases, will be found to be so slight as not to interfere with its integrity. This has been repeatedly borne out in my own experience, as well as in that of those who have tested it.

It is chiefly with the posterior form of hypertrophy that I have to deal, for this is, on account of its frequency and persistence, the more important of the two. Located, as it is, in one of the most inaccessible parts of the nasal cavity, special remedial measures must be adopted for its relief.

The stenosis caused by turbinated hypertrophies may be partial or complete, permanent or temporary.

Many cases of catarrh come into notice, in which the patients suffer with an alternate stoppage and patency of the nostrils. The stenosis in these instances is nearly always anterior, and is evidently dependent upon expansion of the veins forming part of the erectile structure of this tissue. Anything that favors a flow of blood to the part will give rise to this condition; hence we find that persons will complain of inability to breathe in bed through the side of their nose which is lowermost. This condition may continue only a few hours or for several days (temporary stenosis). The continuation, however, of the venous fluxion may lead to an actual stasis, and this, in its turn, to a state of hypertrophy, *anterior hypertrophy* (permanent anterior stenosis). Although posterior stenosis in the majority of cases is found to be incomplete, nevertheless, the obstruction to breathing, caused by the presence of this thickened tissue in the posterior nares, is apt to prove a source of great inconvenience. In some persons it will take on a variable nature, perhaps allowing them comparative freedom of respiration in dry weather, but, on account of its hygrometric nature, swelling and causing obstruction to breathing in damp weather. I have taken advantage of this latter circumstance to operate upon the more sessile forms of hypertrophy in damp weather, their increased size sometimes making it possible to snare them. As soon as these growths have reached a size that will bring them in contact with each other, or with any part of the intranasal mucous membrane, they are apt to enlarge with increased rapidity.

*Hypertrophy of the tissue over the septum is the result of pressure.*

Although the turbinates, in these cases, may not be found pressing upon this tissue, the existence of this form of hypertrophy is, nevertheless, to my mind, clear proof of contact at some period of the disease; a certain amount of turbinated hypertrophy is always found in connection with it. I have a drawing taken from a patient, the right side of whose vomer was occupied by a cup-shaped hypertrophy, the depression on its surface being the impress of the inferior turbinate lying opposite; the inferior turbinate bone of the other side was enlarged and pressed against the vomer, the tissue over which had already commenced to thicken.

*Posterior hypertrophy* is principally diagnosed by the use of the rhinoscopic mirror; hence movements of the soft palate sometimes prove a serious obstacle to the examination. I have been helped out of this dilemma by attention to the nature of nasal expiratory sounds. A partially stenosed nostril will naturally give a high pitched note: high pitched and near, anterior stenosis; distant to the ear, posterior stenosis. Facilities for anterior inspection make only the note caused by the existence of *posterior turbinated hypertrophy* of any value. The inequality of hypertrophy in the nasal cavities renders the sounds more distinguishable. The patient's nose is, of course, freed of mucus, and one nostril is closed by gentle pressure with the finger. The presence of nasal tumors and infractuositities will not interfere with this method, as they can be easily distinguished through the nasal speculum. By careful attention and practice, one should seldom fail to form a correct diagnosis, and he will be spared the annoyance and loss of time necessitated in tying up the soft palate.

Prominent among the troubles brought about by hypertrophied turbinated tissue, is difficulty of hearing. Partial deafness is of common occurrence in the extreme forms of nasal catarrh. It has been too often referred to and treated for middle-ear catarrh. Deafness in one ear, in connection with an hypertrophied turbinated bone impinging upon the Eustachian orifice of the side affected, has led me to believe

that this trouble is often due to pressure, especially when removal of the growth has been followed by complete restoration of hearing. I have the history of a patient upon whom I operated for the removal of large nasal hypertrophies. He complained of deafness in both ears of many years' standing, and had suffered with complete stenosis for fifteen years. Removal of the hypertrophied turbinates was immediately followed by a return of hearing.

Sections of the thickened turbinated tissue under the microscope, show the hypertrophy to be due to pathological changes caused by chronic inflammation. There is a hyperplasia of the connective tissue, the formation of new blood-vessels, and a general proliferation and infiltration of the epithelial elements of these growths.

#### INSTRUMENTS FOR THE OPERATION.

The instruments I generally make use of are: a wire-snare *écraseur*, a combined tongue depressor and rhinoscopic mirror, and two steel clips for retaining cord tape around the palate.

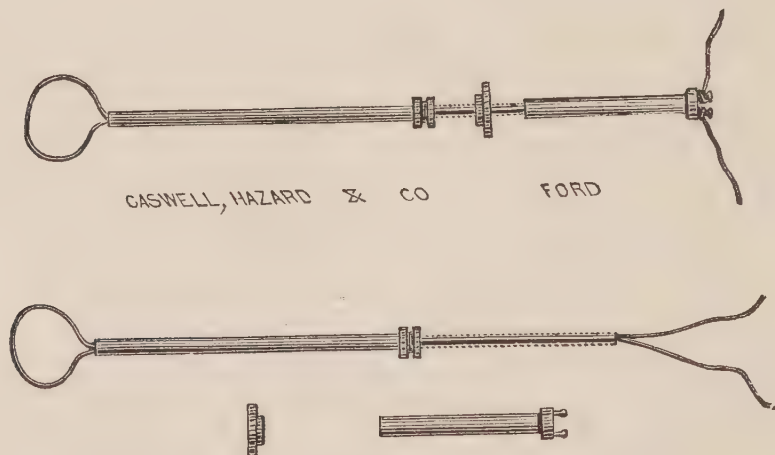


FIG. 2.

The *écraseur* (fig. 2) consists of two metal canulæ; the large one is six inches in length and flexible; the smaller, about four inches long, slides freely upon that part of the main one nearest the operator. The surface of the main canula occupied by the secondary one is threaded for the movement on its surface of a milled-nut. Wire is passed

through the main canula and attached to two retention-pins fixed to the proximal end of the small one. A slight indentation upon the small canula fits a corresponding surface on the large one. This arrangement prevents rotation of the secondary canula, and so overcomes the tendency of the wire to twist and become loosened from its attachment to the growth. The nut, when turned, pushes the outer canula before it, its speed varying from an imperceptible advance, to a rapid motion along the thread. The combined mirror and tongue depressor may be described as follows: If the shaft of an ordinary laryngoscopic mirror should be made to diverge for about an inch, to meet again, however, and form a small ring, it would resemble the tongue-depressor part of this instrument. A mirror is hinged upon this ring. The hinge joint will permit the mirror to be fixed at the most favorable angle for viewing the posterior nares, and at the same time facilitate even depression of the tongue.

This instrument will be found a convenient one, as it enables the operator to bring the posterior nares into view with one hand, leaving the other free for the manipulation of the *écraseur*.

The tape-holders (fig. 3) are intended to take the place of the unsatisfactory and disagreeable procedure of tying the ends of the tape, which passes around the palate. They are two small V-shaped spring clips, so arranged that the tape, passing through apertures in its blades, is caught by a tooth-like projection and firmly held. Pressure on the spring releases the catch and sets the tape free. One of the clips is provided with a rest for the *écraseur*.

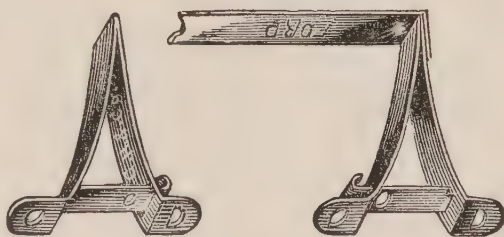


FIG. 3.

#### PRACTICABILITY OF THE OPERATION.

*The operation depends upon the shape of the hypertrophied turbinated bones.*

The posterior surfaces of these bones, especially of the inferior turbinate, show a peculiar constriction formed by the tissue extending backward into the upper pharynx; the extreme point of the growth is thus thrown beyond its base (fig. 1). This constriction forms a nidus for the retention of the *écraseur* wire, and I recall no instance in which the wire, once made to occupy this position, has failed to finish the operation.

#### THE OPERATION.

In using the *écraseur*, pass the two ends of the wire through the main canula, entering them at its distal extremity, and twist them around the retention pins. A loop is formed, whose size, of course, depends upon that of the growth. This loop should be flattened against the orifice of the canula, at the wire's two points of exit, so as to form a point of resistance for its fixation, when traction is made. It can now be placed in any desired position, and firmly held there by making a few turns of the nut. So we have an elastic ring formed, not to be permanently moved from its original position; on account of its elasticity, it can be made to accommodate itself to the narrowest and most tortuous passages. Giving the wire loop a twist toward the side of the nose occupied by the growth, it is fixed by a turn of the nut and passed into the nostril. Holding the rhinoscopic mirror in one hand, the position of the wire loop in the posterior nares is carefully watched, while it is steadily advanced with the other hand, until seen to encircle the growth. The tip of the wire loop has already, by excurvation, been made to assume a point considerably to one side of the axis of the main canula; hence, firm pressure is exercised upon the anterior part of the base of the growth, by the end of the canula, and, at the same time, the apex of the wire loop is pressing firmly on its posterior border. On drawing the wire home, the tissue is cleanly divided, and, if not too large to pass through the nares, it will generally be drawn out clinging to the snare. Make traction very slowly, stopping

at short intervals, in order to cause the slightest amount of hemorrhage.

The hemorrhage is trifling *provided slow traction is made*. It consists usually of one or two small clots, blown out upon the handkerchief. This is not to be wondered at, when we consider that the divided blood-vessels are mostly venous; very few arteries pass into the turbinated bones.

*There is seldom much pain.* A patient from whom I removed the largest growth of the kind I have ever seen, declared, with two attending, physicians, that I had missed it. He shortly afterward hawked up the mass of hypertrophied tissue. Of course, patients vary in their susceptibility to pain, and some may complain, but I consider them to be in the minority. In operating, I make use of well-tempered piano wire, frequently No. 5, piano gauge. Sometimes, on account of the tendency to gag, it will be found necessary to tie up the soft palate. Wallace's method may be practised, or the improvement made by Doctor Bosworth, of substituting cat-gut for string. Once having passed a cord through the nares it is a very simple matter to supply its place with the rubber tape. One end of the tape is now passed through a slit in the upper blade of the tape-holder and knotted. The other end is passed first through the slit in the lower blade, and then through that in the cross bar. The tooth on the cross bar presses upon the tape, and so retains it when it is put upon the stretch. This little device has proved valuable, as it enables one, by a nice adjustment of the tape around the palate, to render its presence tolerable. The strain of the two tapes can be conveniently regulated and nicely balanced, and should efforts at vomiting show themselves, the elastic cords can be quickly relaxed and the tendency at once overcome.

#### APPLICATION OF THE OPERATION.

I have removed growths varying in size from a small projection above the mucous membrane, about the size of a split-pea, to a large mass of hypertrophied tissue, totally

occluding one postnasal orifice, and reaching beyond the vomer across the other. Very fine steel wire will be required for snaring the smaller hypertrophies. Smooth and firm sessile thickenings are not amenable to the operation. Soft sessile hypertrophies, occurring in any part of the nostril, can be easily removed, as the wire readily sinks into the tissue and takes a firm hold on the growth. The time and labor required to snare the smaller hypertrophies will be hardly repaid by the good result.\*

The existence of anterior temporary stenosis does not necessarily call for an operation unless the trouble recurs at short intervals.

In this connection, I will add that the *écraseur* is particularly adapted for the removal of gelatinoid polypi. The elastic loop can be easily made to enter a nostril pressed out of shape by impacted polypi, and the fine steel ring will, with absolute certainty, engage each polyp in turn until the meatuses are completely cleared. It is not necessary to follow the loop with the eye, for when even a small part of a polyp has been encircled by the snare, each turn of the nut will draw the wire nearer to the pedicle. The great strength of the steel piano wire enables one to remove nasal fibrous tumors. A growth of this kind, of the densest consistence, was cut through by Dr. Bosworth, and the wire was unaffected by the enormous strain brought to bear upon it.

#### RESULTS OF THE OPERATION.

The wounded surfaces rapidly heal, and the good results of the operation soon manifest themselves. The immediate result of the operation is a restoration of free nasal respiration. As the nature of turbinated hypertrophies renders their return almost impossible, the establishment of free nasal breathing is apt to be permanent. This is made

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\* Since reading this paper, I have devised a very simple but effective operation for the removal of nasal hypertrophies of every size and description, in connection with the use of the *écraseur*. Reference to the method can be found in Doctor Bosworth's paper on nasal catarrh, *Med. Rec.* for November 6, 1880. I will give a full description of the operation at some future time.

more certain by the cicatricial contraction which follows. Since the most intense inflammatory processes are centred in the tumefied tissues, their removal does away with the active source of the disease. The remarkable cessation of the catarrhal secretion, which often follows the removal of these growths, points to the cause and seat of the disease. Pressure exerted by the hypertrophied turbinated tissue is of itself an active agent toward the excitation of undue nasal secretion. Relief of the pressure naturally relieves the discharge. The multiplicity of the glands in the turbinated tissue hardly makes it necessary to look for any other source for the secretion. I believe chronic catarrh of the accessory cavities of the nose, as compared with the form of the disease attacking the turbinated tissue, to be of infrequent occurrence, and when met with, to be always complicated with an ozæna or atrophic catarrh. If cessation of the secretion does not immediately follow the operation, the opening of the nasal gutter, the inferior meatus, will favor the discharge of that which is left, and also enable one to effectively make use of atomization. I consider the spray-producer, when used properly and with discrimination, the very best cleansing and medicating agent that can be employed in the treatment of nasal catarrh. Its inconsiderate use has, however, given rise to much prejudice against its efficiency.

#### CONCLUSIONS.

In concluding, I would urge the adoption of this simple but effective method for the removal of most intranasal growths, as it possesses manifold advantages over the other modes hitherto recommended. The painlessness of the operation, the small amount of blood lost, the ease with which it is performed, and the decided and beneficial results obtained, all combine to make it a valuable one. The barbarous method of evulsion, with all its train of terrible suffering and torn and bleeding tissues, needs no comment. The use of the ligature and injection of acids, followed by the intended result, a mass of putrefying tissue in the

delicate organ of smell, cannot be too strongly condemned.

Those who have witnessed the manipulation of a galvano-cautery battery, with all its world of complicated attachments and ingenious movements, may, with reason, demand a simpler and more reliable mode of operating, and one that will cause less terror to the patient and more consideration for human suffering. I have intentionally omitted some of the minutiae of the operation, but trust and believe that by giving it a fair trial you will be satisfied with its results and convinced that the statements made in regard to the superiority of my method are not exaggerated.

# TRANSACTIONS OF SOCIETIES.

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## TRANSACTIONS

OF THE

SECOND ANNUAL MEETING

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION,

HELD IN THE CITY OF NEW YORK, MAY 31, AND JUNE 1 AND 2, 1880.

*(Continued from page 72.)*

### *Remarks on Dr. Cohen's Paper.\**

Dr. SEILER remarked that about three weeks before the death of Dr. Cohen's patient he had seen him at the dispensary where he was in attendance, and although there were slight indications of lung disease, it was the very great change in the larynx which caused him to give a bad prognosis. This was the last he saw of the patient until he was requested by Dr. Cohen to make a *post-mortem*. Upon examination, after death, he found the ordinary lesions of the larynx which occur in connection with phthisis. There was a proliferation of endothelial cells. Just behind the epiglottis he found a large tubercle, which had evidently undergone the ordinary caseous degeneration. There were several small collections of round-celled infiltrations, such as are usually called tuberculous, but they were wanting in the peculiar adenoid tissue which is seen in tubercle. The infiltration extended down from the base of the tongue and stopped about on a level with the vocal cord. It had eaten away most of the epiglottis, and stopped pretty abruptly just above the vocal cord. The vocal cord was only slightly congested at its upper edge, but lower down there was no indication of inflammation. Sections of the uvula were made, but showed no changes of special interest. Dr. Seiler explained how microscopic drawings could be made

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\* See Dr. Cohen's paper, p. 103.

upon stone according to the Dixon process, from which any number of prints could be made. He exhibited cuts made by this process, the production of which cost only seventy-five cents. One of these showed a section of the epiglottis with an ulceration. Another showed mucous glands infiltrated with cells, also a collection of inflammatory deposit undergoing cheesy degeneration in its centre.

Dr. CUSHING inquired of Dr. Cohen whether he thought it extremely rare for tubercular affections to first make their appearance in the throat.

Dr. COHEN remarked that he believed if there ever was a case of tuberculosis beginning in the larynx, that reported by him was one.

Dr. CUSHING said that he had seen two cases of tuberculosis in the larynx, where he and other more competent observers could find no evidence of tuberculosis in the lungs.

Dr. SEILER thought that in certain cases phthisical lesions could be detected in the larynx before there was any evidence of their existence in the lungs. These lesions were due to a peculiar infiltration of cells. A primary deposit in the lungs might be, however, so slight that it could not be detected by physical examination, and hence, although the deposit in the larynx might in reality be secondary it would appear to be a primary affection. As a rule, we found phthisical patients suffering from gastric trouble, and if we could inspect the stomach under such circumstances, we would probably find a similar condition in the mucous membrane of the stomach to that found in the mucous membrane of the larynx.

Dr. ROE remarked that he had formerly considered primary tuberculosis of the larynx as a condition which did not obtain. Last fall, however, he had two cases come under his observation, nearly at the same time, that he considered primary tuberculosis of the larynx. One was a young man about 24 years of age sent to him by Dr. Moore, of Rochester. No trouble whatever could be detected in the lungs. He had no hectic. There was only a slight elevation of temperature above the normal, and a slight acceleration of the pulse, but in the larynx the characteristic lesions of tubercular disease were found. This case was under observation for about one week. The patient had previously been seen by many physicians during his illness, which was of about four months' standing. This was the last that was seen of the patient, and he could not say whether secondary tubercle appeared in the lungs or not. The second case was a lady sent to him by Dr.

Langworthy, her family physician. She had a history of chronic laryngitis. Aphonia existed, and he told her physician that he suspected it was a case of tuberculosis, but her physician could not accept this view of the case. The patient was relieved somewhat by topical applications, but still the trouble increased, and it was decided to give her the benefit of a change in climate. She had recently died in Colorado of tuberculosis of the lungs. This condition of the lungs, however, had been detected before she left home. In both these cases he considered that the disease started primarily in the larynx. These were the only cases of this kind he had ever seen.

Dr. ASCH, of New York, thought there was a likelihood that the disease existed in the lungs before its manifestations were observable in the larynx, the larynx simply being the first place where it was detected. It took a very acute ear to hear the primary manifestations of the disease in the lung. He did not think any one looked upon laryngeal phthisis as a disease making its way down into the lung. He inquired if in Dr. Roe's case there was any cough.

Dr. ROE replied that there was only a slight laryngeal irritation without expectoration, such as any patient would have in chronic laryngitis. He thought the question before the Association could only be determined by an examination after the sudden or accidental death of a patient in the early stages of the disease.

Dr. SEILER instanced a case in which he was called upon to make a *post-mortem* examination in his capacity as pathologist to the Presbyterian Hospital in Philadelphia. The patient died with all the symptoms of typhoid fever. She was a young colored woman of eighteen to twenty years of age. Upon examination he failed to find evidences of typhoid fever, but he found tubercular deposits all through the mesenteric glands, intestines and omentum, and, in fact, throughout all of the viscera, except the lungs. The larynx was perfectly sound. Another case came under his notice in the same hospital, which presented no evidences of lung trouble; there was no cough. A diagnosis of typhoid fever had been made, but upon *post-mortem* examination none of the lesions of typhoid fever were found; but the left lung was found entirely collapsed from infiltrations derived from a cold abscess upon the left shoulder. The first case showed that it was possible for tubercular deposits to take place in other parts than the lungs, and the second showed that great difficulty might exist in the pleural cavity without the occurrence of chest symptoms.

Dr. ROBINSON thought there was a large and interesting pathological question which presented in this connection, as well as one which had a practical bearing. Personally, he was more interested in the consideration of the practical part of the subject, and had paid considerable attention to this for five years past. He had tried to profit by his opportunities and to come to an individual opinion. He had made many *post-mortem* examinations, and had had these verified by expert microscopists. He had seen a number of cases of phthisical laryngitis, and had generally presumed that these miliary tubercles were developed secondarily, and he had asked himself if the ulcerative condition in the larynx had not started as a catarrhal affection, and, if deposits were afterward found there, whether they did not come from the lungs. If we could arrest the first stages of a catarrhal affection, we might expect to cure our patient. We could not cure catarrhal pneumonia in any stage except, perhaps, in the initial one. Once the tubercular development has taken place, as it usually does, throughout the economy, our legitimate hopes of a cure came to an end. He did not deny that cases of primary tubercular laryngitis existed, but he thought they were very rare. He wished to ask Dr. Seiler two questions: first, might not the ulcerations in the larynx be secondary to ulcerations or affections of a catarrhal nature? second, could it be determined, fairly well, by means of the microscope, whether tuberculosis ever develops in the larynx before it does in the lungs? He considered air an irritant, and thought it might keep up the ulcerative process; therefore, he could understand how it was that the larynx might be in a certain case more ulcerated, and hence require more particular local treatment.

Dr. SEILER responded by saying that Dr. Robinson's view was exactly the modern idea of the development of tuberculosis. Deposits might take place first in the lung and be carried thence to the larynx, or just the reverse of this. In regard to the second question, he would say that he did not believe that it was possible to determine by means of the microscope, or in any other way, when one process had preceded the other. This was utterly impossible, for we did not have to deal with any specific cell or number of cells. We had to deal simply with histological cells, which were out of place, and which were undergoing degenerative metamorphosis. These infiltrations produce the secondary symptoms of aphonia, difficult deglutition, and asphyxia. He could not exactly coincide with Dr. Robinson in saying that air was an

irritant to ulcerating and broken-down tissues, for the reason that, as a rule, by rigid enforcement of inhalations, you could cure an early pneumonic phthisis. It might be, however, that for a time air acted as an irritant, and by so doing stimulated the vital forces, and thus established a reparative process.

Dr. ROBINSON remarked that whenever cheesy degeneration occurred you could not expect the patient to get well except by the evacuation of the tissues thus affected, and this was accomplished by their being thrown off in the form of sputa. He judged that it was the main effect of the introduction of air to bring about a more rapid liquidation of the products of degeneration, and thus empty the cavities. He would add one word further. If catarrhal changes were developed underneath the mucous membrane of the larynx, you had, as far as the larynx was concerned, that condition in which tubercles were more readily deposited than anything else. Tubercles were more easily deposited about that portion of the lung where secondary formations were found, and hence the necessity of treating the case early, before the ulcerative condition is set up, if possible.

Dr. KNIGHT wished to say one word in regard to the physical signs used in determining the existence or non-existence of disease of the lungs. He was convinced that auscultation and percussion, in the early stages of lung disease, should not be relied upon as determining the non-existence of disease, and that we ought not to say, from the absence of any physical signs indicating lung disease, that no such condition existed. He thought that in the majority of cases pulmonary disease existed for months before there were any changes by which we could make a positive diagnosis. In acute tubercular or miliary disease the patient might die without the development of any morbid signs in the lungs. In pneumonic cases we often waited a long time before there were any signs of the existence of a catarrhal process. Formerly, physicians percussed their patients carefully from day to day, expecting to find some difference in the resonance as an early sign, but the earliest signs obtainable were of a catarrhal nature. A patient might have serious disease of the interior of the apex of the lung without any signs upon the surface, the patient complaining only of a "throat cough." One who was familiar with the development of consumption would entertain fears in regard to the welfare of those patients who complain of a throat cough. He had learned, under such circumstances, not to tell the patient

there was nothing the matter with his lungs, because he did not find the physical evidences of disease. He thought, however, that in Dr. Cohen's case there was evidence that the original seat of the disease was in the throat, inasmuch as the earliest symptom was difficult deglutition.

Dr. COHEN expressed the opinion that Dr. Knight had "hit the nail upon the head." His patient was a driver of an ice-wagon, his neck being greatly exposed. His pulse was normal, temperature normal, and with the exception of a little loss of weight from insufficient food, there was nothing about him to indicate disease. He had the patient strip, and examined him carefully, but could find no evidence whatever of lung trouble. He had never seen such a lesion of the larynx in any other patient without being able to find evidences of softened lung tissue. He was one who believed that tubercular ulceration in the larynx was evidence of softening in the lung. He was not prepared to insist that the case reported by him was one of primary tuberculosis occurring in the larynx, but he gave his paper this title in order to draw out a full discussion of the subject.

The next paper was by Dr. Frank H. Bosworth, of New York, upon "nasal stenosis." (See page 110.)

*Remarks on Dr. Bosworth's Paper.*

Dr. RUMBOLD remarked that he had for years used the scissors for the removal of diseased tissue in nasal stenosis.

Dr SHURLY had not been satisfied with the use of chemical agents. He had never used acetic acid. He thought the galvano-cautery afforded a less painful means of removing the diseased tissue than chemical agents, and the extent of the cut was always entirely under the control of the operator. He had operated many times in this way, and without any bad results.

Dr. ALLEN inquired as to the occurrence of erysipelas in hospital cases; he had never known it to occur in private practice.

Dr. BOSWORTH said that he had never had a case of erysipelas following operation for nasal stenosis in private practice.

Dr. BRANDEIS, on invitation by the Chair, remarked that for a number of years the subject under consideration had enlisted his undivided attention, and that his experience had taught him that it was rather wise to hesitate, especially in those cases which were

the result of a long-standing local lesion. In the application of caustics to the nasal mucous membrane, he had frequently observed that when the application was confined, the inflammation which followed was so great, and extended so far, that not infrequently there was a general ulceration and loss of the tissue of the nasal cavity proper. The galvano-cautery was rapid in its action, but he had observed that sometimes after its use a new stenosis developed. Bearing in mind the treatment of strictures in other canals lined with mucous membrane, especially that of the cervix uteri, he had resorted to a treatment which, though not original, has resulted very satisfactorily; he alluded to the treatment of stricture of the ostium cervicis by the introduction of sponge tents, laminaria tents or bougies. He had tried a similar plan in the treatment of nasal stenosis with the most satisfactory results. Owing to the difficulty of holding these tents in position, he had applied medicated cotton, compressing it as much as possible. He had allowed these plugs to remain in position, four, six, twenty-four and thirty-six hours. The mechanical pressure exerted upon the surrounding parts by their dilatation was so great that the stenosis was overcome, and the canal was restored to its normal size. In hypertrophy of the inferior turbinated bones he had, like Dr. Rumbold, by means of combined scissors and forceps, been able to clip off the offending membrane. After this had been accomplished he was in the habit of cauterizing the base with a caustic solution of the chloride of zinc. He cited the case of a ten-year-old boy who came to him with stenosis of both nasal passages, but more marked in the left nasal cavity, due to an osteo-plastic process of the septum narium. He could not get a view of the cavity of the nose itself, but by judicious manipulation he became satisfied that the obstruction was due to a double fracture of the septum of the nose; upon the lower portion of the fracture there was a large exostosis. He fractured the septum into numerous pieces, and then introduced pledgets of cotton on each side.

Dr. LEFFERTS protested against the prevalent misuse and confounding of the terms "stenosis" and "stricture" as applied to the nasal passage. Stricture he considered to be the narrowing of the calibre of a tube by the contraction of adventitious tissue—of plastic exudation,—while stenosis was the narrowing of the nasal passage most commonly by relaxation of the mucous membrane. He had seen true fibroid or cicatricial tissue of the nasal passage

occur as the result of diphtheria of the nasal passage ; likewise after the use of caustics, and even as the result of the operation of dilatation in certain instances. He thought that treatment by dilatation or by the introduction of bougies could only result in temporary relief. Certainly, by the continuous introduction of bougies one might give rise to ulceration along the turbinated bones. He had seen it do so in more than one instance. This, in some instances, might work a cure ; that is to say, you might get a certain amount of inflammatory hyperplasia in this way, which later would draw the relax mucous membrane into its normal position, and thus relieve the stenosis. The explanation of the temporary relief afforded in many cases by the use of bougies was that the blood was crowded out of the engorged vessels.

Dr. CUSHING remarked that he thought these cases should be treated upon the principle which is adopted in the treatment of nœvi or erectile-tissue tumors occurring in other parts of the body.

Dr. DALY was in the habit of removing the hypertrophied mucous membrane with a galvano-cautery electrode at cherry-red heat. He passed the electrode over the hypertrophied tissue several times at intervals of one or two minutes. At the end of two or three days the swelling which follows the operation will have produced a great deal of obstruction, but upon the fourth day absorption will have begun, which sometimes continues until the eighth day. There were many objections to the galvano-cautery. The batteries would be found to be very capricious. Two cells would be amply sufficient for the removal of hypertrophied tissue at cherry-red heat. He had found recently that the most satisfactory means of opening the nasal cavities was to coat a platinum probe with fused nitrate of silver. In this way you could touch whatever portion you desired.

Dr. LINCOLN wished to say a word in defence of two remedies which had been summarily dismissed in the paper. The two remedies referred to were first, and, *par excellence*, chromic acid. The author of the paper had laid great stress upon the pain attending the use of this remedy. He admitted that pain attended its application, but stated that this was of short duration. Of all chemical remedies it was his favorite. He used it in the following manner : Fixing to a probe a piece of cotton, and placing upon this a crystal of chromic acid, he carried it against the

mucous membrane he wished to destroy. This would cause destruction of the tissue to a considerable depth. After two or four days the eschar could be removed, and upon the fresh surface he made a second application of chromic acid. The other remedy, which he had often used in the same way, though not so frequently, was Vienna or London paste.

Dr. ALLEN hoped that it would be considered within the limits of the present discussion to make some remarks upon ulceration. He would ask what signs we could depend upon for the diagnosis of ulceration in the nasal passages. We had heard this afternoon that ulceration would follow the use of bougies in the nasal cavity. Gynæcologists spoke of ulceration of the cervix or os, and in this instance the appearances were quite unlike that of the typical ulcer. If we took a stick of caustic and applied it to the surface of the body, we would get, as a result, an ulcer; but an ulcer in the nose did not look like this ulcer upon the surface of the body. The ulcer in the nose was modified by currents of air passing over it and drying it so that there remained only a scar. Other things being equal, he considered that a scar in the nasal passage was evidence of ulceration.

Dr. ROE wished to add his testimony to the use of the galvano-cautery in the treatment of hypertrophy in the nasal passage. He had operated with it in many instances, and had no trouble of any moment. He had been in the habit of heating the electrode before introducing it. As the instrument passed in it spent most of its force upon the tissues with which it first came in contact, and this was where the most hypertrophy existed.

Dr. BOSWORTH did not wish to be considered as comparing nasal stenosis to stricture of the os uteri. The point which he wished to bring out in connection with the galvano-cautery was that in making linear incisions there resulted linear cicatrices which diminished the peripheral surface of the hypertrophied tissue. He did not like to pass the electrode into the posterior nares. If he had used the word ulcer he did not intend to use it; he intended to use the word erosion; the ulceration occurred after the use of the cautery, and was a reparative process.

Adjourned till 10 A. M. the next day.

In the evening, as guests of the American Medical Association, the Fellows attended the receptions of Mayor Cooper, Drs. Fordyce Barker and T. G. Thomas, and the reception at the Academy of Music.

THIRD DAY—Wednesday, June 2d, morning session.

The Association was called to order at 10:30 A.M., by the Chairman.

Dr. CARL SEILER, of Philadelphia, proceeded at once to the exhibition of some improved instruments for the removal of intralaryngeal growths, after which he read his paper, which consisted in the history of a case of "papillary growth of the larynx." (See page 121.)

*Remarks on Dr. Seiler's Paper.*

Dr. COHEN remarked that in December, 1878, the patient referred to in Dr. Seiler's paper came to his office with hoarseness, and stated that this condition had lasted for years. Upon examination a tumor was found in the left ventricle. He recommended the removal of this growth, but the family physician objected. The patient went from physician to physician and the benign growth was worked into a state of excessive activity. The doctor heard nothing further from the patient until called by Dr. Seiler to assist in the immediate performance of the operation of tracheotomy. From his examination of the specimens removed, he was of the opinion that the tumor was an epithelioma with papillary outgrowths. Dr. Cohen expressed a desire that the discussion take the line of the transformation of benign growths into malignant ones by improper interference.

Dr. LANGMAID inquired of Dr. Cohen if the lumen of the glottis was contracted when he first saw the patient.

Dr. COHEN replied that it was not, and that the growth had every appearance of a benign one.

Dr. LANGMAID remarked that he understood Dr. Seiler to say that the lumen of the canal was contracted.

Dr. SEILER said that this condition obtained after there had been considerable manipulation, and that the swelling seemed to be due to the irritation. Dr. Cohen saw the patient on New Year's Day and he saw him in June. During this interval the patient had been treated by several physicians.

Dr. LANGMAID said that the reason he asked was, because some years ago he saw five cases of malignant laryngeal growths in all of which the lumen of the canal was contracted. He approved of the operation and wished to ask if the pain was mitigated by it.

Dr. SEILER replied that it was.

Dr. LANGMAID remarked that wherever a pain-giving growth

could be removed it should be. For still another reason he would approve of what Dr. Seiler did, and that was, that he believed the ulceration was not so great after the operation as before it.

Dr. SEILER wished to say a few words in regard to the peculiarities of the case. There were no glandular enlargements of the neck. There was no cough except what was produced by the products of the growth breaking down from the action of caustics.

After the fourth operation the pain in the ear became very great and the cough very distressing, so that for the last two months he was kept under the influence of opium. During the last two weeks of his life he gave him rectal enemas, and quenched his thirst by sponging the body.

The next paper was read by Dr. J. O. Roe, of Rochester, New York, entitled, "fracture of the larynx." (See page 127.)

There being no discussion upon this paper, the Secretary read the paper of Dr. E. Fletcher Ingals, of Chicago, "on the so-called swallowing of the tongue." (See page 134.)

*Remarks on Dr. Ingals' Paper.*

Dr. COHEN considered the term, "swallowing of the tongue," an improper one. He cited a case which had come under his notice where the patient complained of his tongue flopping up against the roof of his mouth, a condition which was relieved by a drink of strong brandy.

The prescribed programme for the morning session having been completed before the hour of adjournment, upon motion of Dr. Knight, Dr. Langmaid, of Boston, was requested to read his paper (candidate's thesis) on "the treatment of certain forms of vocal disability by the application of the principles of voice culture." (See page 137.)

*Remarks on Dr. Langmaid's Paper.*

Dr. SEILER expressed his great gratification with the paper, inasmuch as he had done a considerable amount of work in the same direction, having commenced as early as 1858 to aid his mother, Madame Seiler, in the investigation of the same subject. He had demonstrated, anatomically, that there was such a thing as marginal vibration of the cords. He had with him, in his col-

lection of microscopical specimens, specimens which showed the peculiar folding in of the margin of the vocal cords. He could not coincide with Dr. Langmaid in saying that the so-called falsetto register was a false voice. The chest voice was a full sound; the falsetto was a weak sound. In the falsetto the margins of the vocal cords were relaxed, and with proper cultivation a sound could be produced by the marginal vibrations, which would favorably compare with the notes of the chest, and by the laity could not be distinguished from them. He took exception to the term "reflector" used by Dr. Langmaid in his paper; he preferred the term "resonator." The reflection which occurred was due to the conformation of the cavity itself, and produced a sound-wave of a certain length, which wave became a "resonator" by causing the tone to be heard a long distance and to react upon the vocal cords, which explains the fact that a good singer could sing all day without becoming tired. All that was required of the muscles was to keep the vocal cords in position, and the force necessary to start a vibration was thus in a great measure taken away, so that there was a full vibration of the lower resonant cavities. There was another point to be considered, namely, the position of the larynx in speaking or singing. He thought this had something to do with the understanding of the production of voice sounds. If it rises, it reduces the size of the resonating cavity of the mouth; if it falls, the consequent lengthening acts as a means of tuning the resonators. He wished to say something in regard to the action of the nasal cavity in phonation. We all know that this cavity was closed behind, except in uttering certain non-sounding consonants; but as soon as it was open the tone became nasal. If both cavities were closed in front and behind, the sound became nasal in character, which was due to the fact that the resonant cavities were taken away; there was a stationary wave produced which did not act as a self-sounding wave.

Dr. LANGMAID remarked that if he reasserted his position with an explanation it was because he felt the question under consideration was debatable ground. In reference to the use of the word reflection, he would say that it described the sensation of the singer. In falsetto the sounds were those of relaxation. It was not original, but it seemed to him that in the adjustment of the falsetto voice to any particular pitch, the full action of the laryngeal muscles was not brought into play. That the falsetto voice lacked something was shown by the fact that it would not

express vigorous emotion. He believed that the only point upon which he and Dr. Seiler held different views was in regard to the falsetto.

THIRD DAY.—Afternoon session.

The Association was called to order at 2:30 P.M. by the Chairman, Dr. Cohen.

Dr. WM. H. DALY, of Pittsburgh, Pa., by permission, read his inaugural thesis upon "Nasal Polyps." (See page 147.)

Dr. BEVERLY ROBINSON, of New York, read the history of a case in which great dyspnœa seemed to be attributable to hypertrophy of the tonsils, and in which tracheotomy was performed.

Dr. WM. C. JARVIS, of New York, next read by permission his inaugural thesis on the "Surgical Treatment of Hypertrophic Nasal Catarrh," and exhibited instruments for the removal of the hypertrophied mucous membrane. (See page 159.)

Dr. ANDREW H. SMITH, of New York, brought a patient before the Association, who presented a well-marked substernal tumor which had been diagnosticated as such by Prof. Clark, five years previous. He confessed that at the time when Dr. Clark made his examination, he was unable to find the evidences of that gentleman's diagnosis. Time, however, had proved its correctness. He had not seen the patient for two or three years until that day. He now found him with paresis and congestion of the vocal cord. At the apex of the left lung there was a tubular sound. Since he last saw the patient his voice had become lower in pitch, and there was less twitching of the muscles of the anterior portion of the throat. The patient still complained of pain under the sternum, and his breathing was very short, but his general condition continued to be good. Syphilis appeared to be eliminated from the history of the case. The nature of the tumor was not known.

Dr. S. H. CHAPMAN, of the Yale School of Medicine, exhibited a portion of the body of the third cervical vertebra which he had removed from the throat of a male patient in January, and read the following account of the case :

A man, 36 years of age, thin, pallid, and with a husky voice, presented himself, the 2d of January last, to be treated for a long-standing, exhausting affection of the

throat. The history given was the following: That when 30 years of age he contracted a chancre, which was treated by some lotion, and healed readily without other treatment in two weeks; that four years afterward, he was laid up for a period of eighteen weeks with an attack of peritonitis; that one year afterward, at a political meeting, he drank heavily of brandy, and, becoming excited, talked long and loud.

This was followed immediately by a very severe phlegmonous inflammation of the throat and nose, with formation of ulcers in the throat and nose, which became chronic.

Previous to this attack, he had, however, experienced somewhat severe pain in the back of the neck. The chronic ulcerative inflammation has continued to the present time, with the loss, during the autumn of 1879, of several pieces of the turbinated bones. Five years ago he was married. Two children, one three years old, and the other now five months old, are the result of this marriage, both being healthy; the mother is also healthy. During the many attacks of illness, the physicians in attendance, following the indications which the patient himself suggested, used an anti-syphilitic treatment. During the year 1879, the patient was using both mercury and iodide of potash continuously. For several weeks previous to his first visit to me he had been unable to take solid food, on account of the extreme contraction of the lower part of the pharynx. Fluids returned through the nose, unless the head were tilted back, the nose held, and the fluid given in small quantities at a time.

The conditions on January 2d were these: ulcerations in nasal passages; lower turbinated bones partially destroyed; posterior portion of the septum also destroyed; ulcerative inflammation of naso-pharyngeal space, surface covered with sanious discharge; ulcerations of the gums and inside of the mouth; arch of palate much contracted; posterior wall of pharynx deeply infiltrated and with what appeared to be the opening of an abscess directly in the centre, opposite the third cervical vertebra; lower portion of pharynx contracted; larynx infiltrated and inflamed.

Exploration, with probe, of the apparent abscess disclosed dead bone, loosened and slightly protruding into the cavity of the pharynx. On June 3d, at his house, I extracted the portion of the body of the third cervical vertebra, which you see here ; the opening being smaller than the piece of bone, it was necessary to turn it endwise, and to use considerable force to tear it from its surroundings before it could be taken away. Some hemorrhage followed which was checked by insufflation of subsulphate of iron. The cavity left was about the size of a filbert. For ten days the cavity was treated with glycerate of iodide of sulphur, freely, and many times daily ; with the daily use also of nitrate-of-silver spray, 100 grains to the ounce, upon all the inflamed surfaces.

The anti-syphilitic treatment was no longer considered advisable. Cod-oil and lime, beef-tea and milk-punch were freely used.

Three weeks after the first operation, the disagreeable odor, which had entirely disappeared on removal of the dead bone, was again perceptible, and on my making exploration a portion of the fourth vertebra was found also to be separating. At the end of another week two pieces were dislodged.

Since that time the patient has steadily improved. By the end of March, the pharynx had entirely healed. The posterior wall is, however, very concave.

The return of fluids through the nose is not so ready, but is still a little troublesome.

Solid food, if well masticated, is swallowed with ease ; but largish bits become lodged in the concavity and distress the patient until dislodged. The weight of the patient has increased from 102 lbs. on Jan'y 2d to 133 lbs. on June 1st. Until May, the cod-oil and lime was used.

The only remains of the former process to be at present found, are a few slight and superficial ulcerations inside the alæ nasi.

During the height of the process, the pain in the neck, the difficulty in moving the head, and weakness of the muscles of the arms increased. The patient felt as if his head was not well supported, and complained bitterly of the

excruciating pain in the neck and the darting pains in shoulders and arms.

He was compelled to keep the reclining posture for some days after the first operation, and the pain, to some extent, was relieved by severely cauterizing the nape of the neck.

Both symptoms gradually diminished until at present there remains but a moderate stiffness in the movement of the head and a so-called weather pain in the shoulders.

The following papers (candidates' theses) were read by title.

"Differential Diagnosis between Tuberculous and Syphilitic Laryngitis," by Charles E. Sajous, of Philadelphia.

"Tuberculous Laryngitis in its Relations to Phthisis Pulmonalis," by Dr. E. C. Bean, of Louisville."

"A rare Case of Tracheal Stenosis," by Dr. W. Gleitsmann, of Ashville, N. C.

"A new Method of Treating Chronic Nasal Catarrh," by Dr. Harrison Allen, of Philadelphia.

The list of papers having been concluded, the Chairman congratulated the Association upon the character of the work they had done, and, thanking the visitors for their presence during the various sessions, he announced that the Association would go into a final business session.

#### BUSINESS SESSION.

The following officers for the ensuing year were elected by ballot :

President, Dr. J. Solis Cohen, of Philadelphia ; Vice-Presidents, Dr. W. C. Glasgow, of St. Louis, Dr. J. O. Roe, of Rochester ; Permanent Sec. and Treas., Dr. Geo. M. Lefferts, of New York ; Librarian, Dr. F. H. Bosworth, of New York ; Member of Council, Dr. Andrew H. Smith, of New York.

The place determined upon for the next meeting was Philadelphia ; time, Monday following the meeting of the American Medical Association.

Dr. ASCH moved, on behalf of the New York members, a vote of thanks for the presence and interest shown on the part of those who had come from a distance. Carried.

Dr. HARTMAN moved, on behalf of the visitors, a vote of thanks

to the New York members for the hospitable manner in which they had been received. Carried.

The Chairman appointed Drs. Shurly and Asch, as a Committee, to introduce to the Association the newly elected officers.

This formality having been gone through with, Dr. Cohen thanked the Association for the honor they had conferred upon him, and expressing a wish to meet all the members present in Philadelphia in 1881, he declared the Second Annual Convention of the American Laryngological Association dissolved.

In the evening the Fellows of the Association attended a reception and performance at Booth's Theatre, as guests of the American Medical Association.

# QUARTERLY REPORT AND ABSTRACT OF LARYNGOLOGICAL LITERATURE.

By GEORGE M. LEFFERTS, M.D.

## PART I.

### I.—LARYNX.

1. ARIZA, R. General considerations on diagnosis and therapeutics, as applied specially to laryngology, and as demonstrated in the cure of a case of laryngeal polypus with aphonia. *Anfiteatro Anat.*, Madrid, 1880.
2. BRAUN, H. Cure of a stenosed larynx and trachea, by dilatation with rubber tampons. *Centralblatt für Chir.*, No. 5, 1880.
3. CHIARI, O. Two cases of chorea laryngis. *Monatssch. für Ohrenheilk.*, No. 1, 1881.
4. COUPER. Fracture of thyroid cartilage, etc. Case. *Med. Times and Gaz.*, December 18, 1880.
5. DESPRÉS, M. Cancer of the larynx ; tracheotomy. Case. *Gaz. de Hôp.*, No. 16, 1881.
6. FRANKS, K. M. Acute laryngitis during convalescence from small-pox. *Med. Press and Circular*, Jan. 5, 1881.
7. FRITSCHÉ, M. A. A case of ulcer of the vocal cords following the irritation caused by gastric juice. *Deut. Med. Wochensch.*, No. 5, 1881.
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11. JOHNSON, G. A history of three cases in which a warty growth was removed from one of the vocal cords by the aid of the laryngoscope. *Lancet*, Jan. 22, 1881.
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16. MARIAN, A. Laryngitis subchordalis hypertrophica chronica; laryngeal stenosis. Catherization. Cure. *Prag. Med. Wochensch.*, 1880, v, 454.
17. MARTEL, E. Œdema of the right arytaenoid. Case. *Ann. des Mal. de l'Oreille et du Larynx*, December, 1880.
18. MOURE, E. J. Acute primary œdema of the arytaeno-epiglottidean folds. Case. *Rev. Mens. de Laryngol.*, Bordeaux, 1880-1, i, 27.  
 ——— Cystic tumor of the lingual face of the epiglottis. Case. *Four. de Méd. de Bordeaux*, 1880-1, x, 120.  
 ——— Laryngeal papilloma in a child of 5, with peculiar symptoms. Case. *Rev. Mens. de Laryngol.*, Bordeaux, 1880-1, i, 3.
19. OTTO, A. Hæmatoma of the ary-epiglottic folds. *Deut. Arch. für Klin. Med.*, 1880, xxvii, 580.
20. POORE. Case 1. Paralysis of the crico-arytaenoidei postici, or dilators of the glottis. 2. Paresis of the adductors of the cords. 3. Ozæna. Cases. *Lancet*, January 1, 1881.
21. ROSSBACH, M. J. On the treatment and cure of laryngeal phthisis. *Monatssch. für Ohrenheilk.*, No. 1, 1881.
22. SCHECH. Clinical and histological studies of laryngeal phthisis. *Monatssch. für Ohrenheilk.*, No. 12, 1880.
23. SCHIFFERS. On paralysis of the abductor muscles of the glottis. *Bull. Acad. roy. de Med. de Belg.*, 1880, 3 s., xiv, 736.
24. SCHNITZLER, J. First endo-laryngeal operation during anæsthesia. Extirpation of a laryngeal polypus in a child of 8 years. *Wiener Med. Presse*, Nos. 48, 49, 1880.
25. SCHOETZ. On the treatment of chondritis vocalis inferior hypertrophica. *Berlin. Klin. Wochensch.*, No. 6, 1881.
26. SCHROETTER, L. On the operation on laryngeal polypi by means of a sponge, according to Voltolini. *Centralblatt für Chir.*, No. 4, 1881.
27. SCHWARTZ. Cervical adenitis with symptoms of œdema of the glottis. Case. *La France Méd.*, No. 20, 1881.
28. SIMON, J. On the differential diagnosis of the forms of laryngitis in children. *Gaz. de Hôp.*, No. 14, 1881.
29. STEWART, W. An explanation of the nature of the connection between throat affections and acute rheumatism. *Lancet*, January 22, 1881.
30. TACHARD, M. Transverse wound of the larynx; lesion of recurrent nerves. Case. *Gaz. de Hôp.*, May 15, 1880.
31. TESSIER, M. Syphilis and tuberculosis of the larynx. *Thèse de Paris*, No. 44, 1881.
32. THOMAS, L. On varix of the mouth, pharynx and larynx. *The Specialist*, vol. i, No. 6, 1881.

33. WEBER, L. On paralysis of the posterior crico-arytænoid muscles. *Centralblatt für Med. Wissensch.*, No. 2, 1881.

2. **Stenosis of the larynx and trachea, cured by dilatation with rubber tampons.** Passing over many interesting details of this unusual case, it will be sufficient for explanation to say that one of the strictured portions of the air-tube lay just below the larynx, and another at the level of the cricoid ; that they were only discovered after the operation of thyrotomy, and that they were dilated successfully by a **T** shaped rubber tampon, which was introduced through a tracheotomy wound that had long existed and which was subsequently closed.

3. **Chorea laryngis.** Chiari reports two interesting cases of this affection, with the usual clinical history, except that in the second case the vocal cords were not held tense during the paroxysm, and the glottis remained open ; expiration, therefore, notwithstanding its spasmodic character, was noiseless ; accompanying choreaic movements were also wanting.

In both cases, choreaic movement was distinctly limited to the muscles of expiration. All diseases of the respiratory system could be eliminated. The treatment by narcotics was without avail, in both instances, and success only attained by roborants, although neither nervousness nor hysteria could be proven.

6. **Acute laryngitis during the convalescence from small-pox.** Franks relates, in detail, the history of a very interesting case, which illustrates the second form of acute laryngitis occurring during the above disease. He divides the kind of laryngitis, that may occur, into three forms : First, a pustular, appearing about the sixth day of the disease, or a few days subsequently, which, in the majority of the cases, causes no inconvenience. Second, an acute laryngitis coming on between the ninth and twelfth days of the disease, about the period when the swelling of the face has reached its maximum. It is a complication of confluent small-pox, and is often preceded by a confluent eruption on the mucous membrane of the throat and larynx. It is characterized by extensive inflammatory exudation into the submucous tissue of the larynx, causing the parts to look thickened, tumefied and red, sometimes completely blocking up the opening. The symptoms of suffocation may be so rapidly developed that a fatal issue may ensue before relief can be obtained ; or, on the other hand, the laryngitis may pass into a subacute form, and be so insidious that urgent symptoms may not be developed for a considerable period. This class of case is well exemplified in the one reported by the doctor. The third form is most alarming ; its essential peculiarity is a croupous or diphtheritic inflammation. These cases usually begin about the tenth day of the variola ; acute inflammation of the larynx, with infiltration of the ventricular bands and arytæno-epiglottic folds, is so great that in a short time the whole opening in the larynx may be closed up, the mucous surfaces being covered with false membrane. This condition is of course exceedingly dangerous, and treatment is unfortunately often of no avail. Mackenzie says that it is almost useless.

7. **Ulcers of the vocal cords, from gastric juice.** Fritsche calls special attention to the case and its causation, as perhaps it may explain the occurrence of erosions of the vocal cords in phthisis, for instance, which sud-

denly appear without known cause. His patient had a polypus upon the left vocal cord, which he removed with the galvano-cautery and forceps; in ten days the swelling had subsided, and the ulcer at the seat of the operation was healing. A short time later the patient reappeared, with pain in the larynx and loss of voice; the vocal cords anteriorly much swollen and reddened, and posteriorly the seat of deep ulcerations. The patient was questioned as to his possible swallowing of any acid or corrosive fluid, by mistake, but he had not. Further inquiry revealed the fact that, following the administration of a dose of oil, he had vomited profusely, and in so doing was conscious of sudden pain in the larynx, and shortly after had lost his voice. Fritsche, therefore, concludes that during the act of retching, a portion of the acid contents of the stomach had passed over the posterior commissure of the larynx to the posterior extremities of the vocal cords, and cauterized the affected points, which were in a stage of inflammatory infiltration, and prone to take on ulcerative changes. His treatment lay in the insufflation of acetate of lead, or alum with morphia, and later, the use of the galvano-faradic current.

**11. Growths on the vocal cords.** The nature of Johnson's article is explained by its title. His cases were ordinary ones of laryngeal papilloma, and their treatment at his hands was not marked by any untoward incident. *Apropos* of them he makes the following remarks in relation to a choice of instrument:

When the tumor is of large size and has a broad base, as in the first and second cases recorded, the laryngeal forceps is, perhaps, a better instrument than the wire *écraseur*. I found the forceps very useful in the first two cases, but for the removal of so small a growth as that in the third case, I much prefer the *écraseur*; and I doubt whether this small growth could have been safely removed by the forceps.

The *écraseur* has this obvious advantage over any form of laryngeal forceps, that, unlike them, it very rarely tears the mucous membrane or seizes any other object than the growth to be removed. It is a perfectly safe and harmless instrument, whereas, with the forceps, an arytaenoid cartilage might be seized and broken or dislocated. The secret of success in using the *écraseur* consists in bringing the fine steel wire loop exactly opposite the wart at the time when the contact of the instrument excites the sudden closure of the glottis, by which means the tumor is driven into the snare and caught by the sudden retraction of the wire.

**14. Pathological changes in the pharyngeal and laryngeal mucous membrane.** Under this title, Löri describes two cases of pemphigus of the pharynx and larynx, the bullæ occurring, in the latter locality, upon the epiglottis, and further calls attention to a new form of disease which he terms "miliary vesicles" in the same localities. They occur frequently, are met with only in well-nourished and well-cared-for individuals. The patients complain only of a tickling in the throat, and apply to the physician, as a rule, only after they themselves have discovered, upon an inspection of their own throats, the little vesicles filled with clear fluid. Löri, in his early examinations, considered them to be simply air bubbles, and it was only after he failed to remove them with a sponge that he came to regard them as a diseased condition of the mucous membrane. The vesicles are found most abundantly and

most frequently upon the soft palate, the velum and the uvula, more rarely upon the gums and the tonsils, and only occasionally upon the pharyngeal wall. In the first-named localities, especially at the raphe of the soft palate, they may become confluent, and only at this point and upon the uvula is their contents of a reddish color, and this very rarely. In the larynx, they may occur upon any part of the mucous membrane, or on the vocal cords; usually, however, they are seen upon the lingual face of the epiglottis and upon its free edge. They last no longer than ten days; on the second or third day, they appear only as a yellowish point upon the mucous membrane, which, in turn, has disappeared by the fourth or fifth day. In very rare cases the process may continue, new vesicles forming upon the seat of the old. The disease can only be confounded with herpes of the pharynx or larynx, and that the two diseases have long been confounded Lõri does not question. The differential diagnosis may be made, by attention to the following points:

The "miliary vesicles" are never accompanied in their appearance by fever; herpes is.

In the former, the vesicles always remain small, no matter what their number may be. In the latter, the vesicles are much larger.

Following herpes of the pharynx or larynx, a slight loss of substance remains for several days, and if the vesicles are confluent, ulcers with a diphtheritic appearance may occur on the spot. In "miliaria," the contents of the vesicle dries and a loss of substance never occurs.

**19. Hæmatoma of the ary-epiglottic folds.** The full details of this rare and interesting case are given in the original article, with cuts. An insane patient made a small wound in his throat, with suicidal intent, which was closed by simple dressings. A few hours later he died very suddenly from suffocation. On autopsy, no injury of the larynx or of the base of the tongue could be found, but the laryngeal aperture was occluded by two large blackish tumors of soft consistence and smooth surface, which, commencing between the tongue and the epiglottis, on either side, ran downward and backward, growing larger and pyriform as they proceeded, until they passed over and behind the aryænaoid cartilages. The one on the right side was larger than that on the left. These masses touched in the median line, and left, anteriorly, but a small opening between them and the laryngeal face of the epiglottis. No connection could be traced between them and the external wound, and the author endeavors to account for this fact in various ways. He raises also the practical questions: Can the affection be recognized during life, and if so, what should be the treatment? The latter, he very properly concludes, lies in the immediate use of a laryngeal catheter. Experience shows (all other known cases of like nature to the one here reported are detailed in the article) that no time is allowed in which to perform a tracheotomy when suffocative symptoms make their appearance.

**21. On the treatment and cure of laryngeal phthisis.** The greater part of Rossbach's paper is taken up with a repetition and review of Schmidt's views and methods of treatment. (See these ARCHIVES, vol. ii, p. 88.) He then proceeds to criticise his statements, denying that the former's treatment is in reality antiseptic, and asserting that his good results are more due to the employment of constitutional means than to the use of local remedies. Apparently,

however, he does not differ with him regarding the curability of the disease, for he reports, in some detail, three cases of his own in which a cure was attained by means of general hygienic measures ; these being associated in two cases with a local treatment of carbolic-acid inhalations ; and in one, by pencillings with silver nitrate, in strong solution.

The success attending the deep scarifications of the oedematous and infiltrated tissues in tubercular laryngitis, recommended by Schmidt, he endorses, from his own experience.

**22. Laryngeal phthisis.** Schech's studies have led him to the conclusion that in all cases of laryngeal phthisis, with but few exceptions, tuberculosis of the mucous membrane is the sole etiological factor. In treatment, he uses disinfectants, specially boracic acid, with or without morphine. He claims good success.

**24. The first endo-laryngeal operation under etherization.** Schnitzler gives the full details of the history of a case of laryngeal papilloma, in a child of eight years, which he successfully removed at the first sitting, the patient being, during the operation, under the anæsthetic influence of ether ; and calls special attention to the case as being the first in which this method has been employed. The details of the operation will be found full of interest, and Schnitzler's remarks upon it practical and sensible ; he does not underrate the difficulties and even dangers of an operation in the interior of the larynx under these circumstances, but, happily, has been able to overcome them. The little patient's mouth was held open by means of a dilator, the tongue drawn out and held by forceps, the laryngeal mirror introduced into the fauces (secretion does not appear to have embarrassed the procedure), and the growth seized and removed by forceps, in the usual manner, the whole operation lasting no more than two or three minutes, according to the operator. (For further references to this interesting case, see *Wiener Med. Presse*, No. 37, 1880 ; *Wiener Med. Wochensch.*, No. 38, 1880, and *Gaz. Hebdom.*, No. 39, 1880.)

**25. Therapeutics of chondritis vocalis inferior hypertrophica.** Schoetz's experience in three cases of the affection, the histories and laryngoscopic appearances of which he relates in detail, have led him to speak enthusiastically of the virtues of iodide of potash as a curative means. It has, however, its limits ; in cases of hard, contracted fibrous tissue with but few blood-vessels, where a previous tracheotomy has allowed of a fatty degeneration of the laryngeal muscles and an ankylosis of the crico-arytænoid joint, it is useless. He believes that in such instances local measures are alone indicated, notably dilatation by Schroetter's method. Where, however, the disease has not developed beyond the stage of inflammatory hyperplasia ; where a cellular infiltration, susceptible of reabsorption, forms the basis of the hypertrophy, he extols its use. Laryngitis chronica sub-glottica must, when possible, be cured before hypertrophic changes are established.

**28. Differential diagnosis of infantile laryngitis.** Simon first alludes to the fact that the disease may be acute or chronic in its nature—the latter much rarer in children than in the adult—and deals alone, then, with the former class. Acute laryngitis may be of a simple inflammatory nature, due to exposure ; it is usually slight, but may give rise to serious accidents ; to this latter class belongs the acute laryngitis of rougeola and that of variola, the latter char-

acterized by the presence of pustules upon the laryngeal mucous membrane. Second, stridulous laryngitis, or inflammation of the glottis, accompanied by spasm and the apparent phenomena of croup. Third, pseudo-membranous laryngitis, or croup with the formation of diphtheritic membrane. The symptomatology of each form, and the differential diagnosis, follow.

29. **Throat affections and acute rheumatism.** Hemming bears corroborative testimony as to the apparent connection, which is frequently noticed between rheumatism and certain throat affections, tonsillitis especially. In almost all cases of tonsillitis which he has lately treated he has prescribed salicylate of soda, in combination with sulphate of magnesia, and sulphate or salicylate of iron, usually with very excellent results. Patients who have had tonsillitis several times before have assured him that they had never previously got over an attack so quickly as they did under this treatment.

32. **Varix of the mouth, larynx and pharynx.** Thomas tells us that many diseased and very troublesome conditions in the mouth and throat are produced, aggravated or rendered chronic by the existence of varicose veins, which frequently escape observation and treatment, either owing to their concealed position, or to their significance being overlooked. Although not generally described as varicose veins, when found in these situations, they are often truly permanently dilated vessels, and are not merely temporarily engorged owing to transitory causes. They are frequently associated with a similar condition in other parts, although they not uncommonly owe their existence to purely local influences.

The predisposing and exciting causes appear to be age, debility and privation, syphilis, ranula, phthisis, a catarrhal tendency, and an improper use of the voice professionally, as in the case of singers and clergymen. Granulations and adenoid growths are very frequently associated with pharyngeal varix, as are also chronic postnasal catarrh and an elongated condition of the uvula, these morbid conditions being probably a direct result of the venous engorgement.

An enlarged and tortuous vein, which may have hitherto occasioned great inconvenience and also escaped detection, may often be discovered by lifting up the uvula and soft palate, the use of the rhinoscope being hardly needed in such cases. The symptoms produced by these veins in the pharynx are very various—very often soreness and dryness, and often great pain, neuralgic in character; this is so great sometimes that the patients become very annoyed or depressed on being told that they have only a relaxed throat. The secretion of mucus is usually excessive, and causes considerable inconvenience; and the patient is constantly conscious of the existence of his throat, and probably feels as though some foreign body were lodged there. There is always difficulty in singing and prolonged speaking; in fact, the singing voice is generally greatly affected if not ruined. Several methods can be employed for obliteration, which may be enumerated in order of merit, although they are adapted to different situations and classes of cases, viz.: the acid nitrate of mercury, the galvano-cautery, a heated wire, a nitrate of silver point, and the scissors or knife. The acid nitrate can be strongly recommended, as it is very effectual, and if applied carefully does not spread, and causes very little pain. It should be used on an aluminium stem with a very minute fragment of wool twisted

round the point, which should be firmly pressed against the thickest part of the vein for about twenty seconds, and on removal a white scar will be seen.

33. **Paralysis of the abductor muscles of the glottis.** A tracheotomized patient, with the above condition, which had developed during convalescence from typhoid fever, suddenly died, after wearing the tube for many weeks, with symptoms of bronchitis and broncho-pneumonia of the right lung. No reddening nor swelling of the throat, slight pain only on pressure. On *post-mortem* examination, the trachea below the tracheotomy wound was found to be much inflamed, with epithelial erosions and membranous deposits. Its immediate neighborhood was the seat of a general sloughy degeneration, and infiltrated with pus. All neighboring lymphatics were swollen and partly filled with pus. Larynx and vocal cords free. Both recurrent nerves were imbedded in the sloughy mass above alluded to. They showed no marked change, aside from being slightly flattened. Color normal. In the larynx no signs of chondritis. The posterior crico-arytænoid muscles were not atrophied, and both microscopically and macroscopically were of normal appearance. The microscopic examination of the nerves gave but a negative result. In certain fibrils, the axis-cylinder was slightly smaller than normal, but there was no other sign of a regressive metamorphosis. Their lumen was intact. Weber alludes, in conclusion, to the difficulty of accounting for the fact that, though both recurrent nerves were compressed, only the posterior crico-arytænoid muscles were affected.

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## MISCELLANY.

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### INTERNATIONAL MEDICAL CONGRESS.

#### SECTION IV.—MEDICINE.

*President.*—Sir WILLIAM W. GULL, Bart, F. R. S.

#### SUBSECTION—DISEASES OF THE THROAT.

*Chairman.*—Dr. GEORGE JOHNSON, F. R. S.

*Secretaries.*—Dr. F. DE HAVILLAND HALL, Dr. FELIX SEMON, Dr. THOMAS JAMES WALKER.

The Seventh Session of the International Medical Congress will be opened in London on Tuesday, August 2, 1881. The meetings for business will commence August 3d and end August 9th.

The Congress will be composed of medical men, legally qualified to practise in their respective countries, who shall have inscribed their names on the register of the Congress, and shall have taken out tickets of admission. The subscription is fixed at one guinea, and each member of the Congress will be entitled to a copy of the Transactions when published.

The work of the Congress is divided into fifteen sections, and museums of objects of scientific and professional interest will be on view during the meeting. Opportunity will be given for the demonstration of patients, specimens, new instruments and apparatus, new methods of illumination, etc.

The official languages are English, French and German. No speaker is allowed more than ten minutes, with the exception of readers of papers, who may occupy fifteen.

Notices of papers, together with abstracts of the papers, to be read in any of

the sections, must be sent to the Secretaries of that section before April 30, 1881. Questions which have been agreed upon for discussion in the sections will be introduced by members previously nominated. The following is the list of subjects and of readers of the introductory papers for discussion in the Laryngological Subsection:

1. *Local treatment of diphtheria.* Dr. Morell Mackenzie (London) and Dr. Tobold (Berlin).
2. *Pathology of laryngeal phthisis.* Prof. Krishaber (Paris) and Prof. Waldenburg (Berlin).
3. *Laryngoscopic signs in connection with injuries or diseases of the motor nerves of the larynx.* Prof. Gerhardt (Wurzburg) and Prof. Lefferts (New York).
4. *Neuroses of sensation of the pharynx and larynx.* Prof. Schnitzler (Vienna) and Prof. Elsberg (New York).
5. *Indications for extra- or intra-laryngeal treatment of growths in the larynx.* Dr. Fauvel (Paris) and Prof. Burow (Königsberg).
6. *Results of the mechanical treatment of laryngeal stenosis.* Dr. Paul Koch (Luxemburg) and Dr. Hering (Warsaw).
7. *Indications for the complete or partial extirpation of the larynx.* Dr. Foulis (Glasgow) and Dr. Schech (Munich).
8. *Galvano-caustic method in nose, pharynx and larynx.* Prof. Voltolini (Breslau) and Dr. Solis Cohen (Philadelphia).
9. *Adenoid vegetations in the vault of the pharynx.* Dr. W. Meyer (Copenhagen) and Dr. Loewenberg (Paris).
10. *Nature and treatment of ozæna.* Dr. B. Fränkel (Berlin) and Dr. Fournié (Paris).

All communications regarding this Subsection should be addressed to Dr. F. SEMON, 59 Welbeck Street, London, W.

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#### AMERICAN LARYNGOLOGICAL ASSOCIATION.

The Third Annual Meeting of the AMERICAN LARYNGOLOGICAL ASSOCIATION will be held in Philadelphia, May 9, 10 and 11, 1881. Notice of papers intended to be read by Fellows, giving the title and the length of time the reading will occupy, as well as candidate stheses, must be forwarded, prior to April 2d, to the Secretary, Dr. G. M. LEFFERTS, No. 6 W. 33d Street, New York.

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#### AMERICAN MEDICAL ASSOCIATION.

##### SECTION OF OPHTHALMOLOGY, OTOTOLOGY AND LARYNGOLOGY.

As announced in these ARCHIVES, p. 102, the next meeting of this Association and Section will be held at Richmond, Va., May 3d. Communications should be sent to the Secretary, Dr. SWAN M. BURNETT, 1215 I Street, Washington, D. C.

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The next meeting of the NEW YORK LARYNGOLOGICAL SOCIETY will take place at the residence of Dr. Elsberg, 614 Fifth Avenue, on April 14th.

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The next meeting of the PHILADELPHIA LARYNGOLOGICAL SOCIETY will take place at the residence of Dr. COHEN, 1431 Walnut Street, on April 22d, and the Annual Meeting at Dr. COHEN's house, on May 27th.

## ARCHIVES OF LARYNGOLOGY.

## CLINICAL REMARKS\*

ON THE PROCLIVITY OF THE ABDUCTOR FIBRES OF THE RECURRENT LARYNGEAL NERVE TO BECOME AFFECTED SOONER THAN THE ADDUCTOR FIBRES, OR EVEN EXCLUSIVELY, IN CASES OF UNDOUBTED CENTRAL OR PERIPHERAL INJURY OR DISEASE OF THE ROOTS OR TRUNKS OF THE PNEUMOGASTRIC, SPINAL ACCESSORY, OR RECURRENT NERVES.

By FELIX SEMON, M.D., M.R.C.P.,

LONDON.

THE curious and important fact, which forms the subject of the present communication, is by no means entirely new or unknown. The relatively greater disposition to implication of the abductor filaments was illustrated by Gerhardt<sup>1</sup> as long ago as 1863, and by Morell Mackenzie,<sup>2</sup> in 1868, and alluded to since by Schech,<sup>3</sup> Penzoldt,<sup>4</sup> Burow,<sup>5</sup> again by Mackenzie,<sup>6</sup> by myself,<sup>7</sup> by Bosworth,<sup>8</sup> by Rosenbach,<sup>9</sup> and possibly by others.

With the only exceptions, however, so far as I know, of Bosworth's argument—with which I but very partially

\* Dr. Semon's MS. was received in December, 1880. Its publication has been unavoidably so long postponed. This statement is made both as acknowledgment of the fact and as apology.—ED.

<sup>1</sup> Studien u. Beobachtungen über "Kehlkopflähmung." *Virchow's Archiv*, vol. xxvii, p. 88, *et seq.* (Cases 10, 12, 13.)

<sup>2</sup> "Hoarseness and Loss of Voice." Cases 19 and 20.

<sup>3</sup> "Experimentelle Untersuchungen über die Functionen der Muskeln und Nerven des Kehlkopfs." Würzburg, 1873, p. 44.

<sup>4</sup> "Ueber die Paralyse der Glottiserweiterer." *Deutsches Archiv für Klin. Medizin*, vol. xiii, 1874, p. 107, *et seq.*

<sup>5</sup> "Paralyse der Musc. crico-arytænoidei postici, etc." *Berliner Klin. Wochenschrift*, 1879, Nro. 33.

<sup>6</sup> "Diseases of the Throat and Nose," 1880, p. 440.

<sup>7</sup> German edition of Mackenzie's work. Foot-notes on pages 574, 575, 587, 629.

<sup>8</sup> *New York Med. Journal*, Nov. 1880, p. 460.

<sup>9</sup> *Bresl. ärztl. Zeitschrift*, I, 2, 3, 1880.

agree,<sup>1</sup>—of Rosenbach's paper (which comes to my knowledge only in a short abstract in *Schmidt's Jahrbücher*, vol. 188, 1881, p. 134, while I am correcting the proof-sheets of this communication), and of the remarks in the English and German editions of Mackenzie's recently published "Diseases of the Throat and Nose," all these allusions are merely incidental, and intended rather to explain, by some hypothesis or other, what is considered a pathological curiosity, than to come to certain definite and important general conclusions.

Although this does not apply to Mackenzie's later remarks in his text-book, nor to my foot-notes in the German edition thereof, yet the form in which they had to be couched in a book of this kind, naturally prevented the subject from receiving the more elaborate consideration from a clinical point of view that it certainly deserves.

Its importance is, I hope to show, so great—especially with regard to the diagnosis of diseases of the brain and chest, in which the laryngeal affection plays the rôle of an important, sometimes pathognomonic symptom—that I consider it not only justifiable, but even very desirable, that this question should be once more and separately brought before those who have the opportunity of either corroborating or correcting my statements and conclusions.

The question at issue stands thus :

It is well known that, with the exception of the cricothyroid muscles (the tensors of the glottis), which are supplied by the superior laryngeal nerve, *all* the other laryngeal muscles, adductors as well as abductors, receive their motor innervation from the recurrent laryngeal nerve.<sup>2</sup>

But this fact, simple and natural as it seems to be to all of us who are accustomed to look at it as to a self-understood matter, nevertheless invites a consideration concern-

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<sup>1</sup> I think it right to state here that the MS. of this paper was already in the hands of the Editor, when I became acquainted with Dr. Bosworth's important paper. I have preferred to refer to some of his statements which bear upon the question under consideration, by making foot-notes under the original text, instead of interrupting my own argument by a discussion of controversial points.

<sup>2</sup> The thyreo-epiglottici and ary-epiglottici muscles are *perhaps partially* supplied by the superior laryngeal nerve. (Leube, *Deutsches Archiv für Klin. Medizin*, vol. vi, p. 266.)

ing a very interesting, very important, and wholly unsolved question, viz., as to the manner in which this small nerve accomplishes its most complicated and intricate functions.

Quite apart from the delicacy of the mechanism of the *vocal* apparatus, over which the recurrent nerve, in conjunction with the superior laryngeal nerve, has to preside, the natural question must present itself at once to our mind: In what way are the diametrically opposed functions of opening and closing the glottis accomplished, over which, as far as we know at present, the recurrent nerve alone presides? Are we to believe that the nerve is, in fact, a homogeneous one, but that different stimuli, or stimuli coming from different centres, can set up in its root different forces, conducted through the *same* nerve-fibres, and resulting at one time in a general involuntary contraction of the abductor muscles, and at another in the almost always voluntary contraction of their antagonists? <sup>1</sup> Or are we to suppose that, though the nerve is apparently homogeneous,

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<sup>1</sup> Bosworth states that the action of the glottis-opening muscles is, "of course, purely involuntary, in that it is entirely beyond the control of the will." This statement seems to me somewhat too absolutely framed. I go so far with him, that I believe that under normal conditions of breathing this action is quite as automatic as that of respiration in general; but at the same time I do not see why the more energetic contractions of the abductor muscles, during *deep* inspiration, should not be occasionally quite as much under the control of the will as the act of deep inspiration itself. Why should the wider opening of the glottis in a voluntary deep inspiration be regarded as an exclusively involuntary and reflex movement, *following* the voluntary act of deep inspiration, and why not as a *part* of this act itself? It must not be forgotten that the posterior crico-arytænoid muscles are striped muscles. This is not the occasion on which to discuss this very interesting physiological question more fully, but I personally am much more inclined to reason as follows:

"In order to understand correctly the movements taking place within the larynx, it should always be remembered that they are not *exclusively* results of the *direct action of the muscles*. Dilatation and constriction of the different laryngeal compartments can, up to a certain degree, be produced as well *by the elastic membrane of the larynx returning to its former state*, after certain muscles, which brought it into a state of tension, have ceased to act. This state of things much resembles that acting upon the thorax during inspiration and expiration." (Luschka, "Der Kehlkopf des Menschen," p. 115. The italics are my own.) Now it seems to me that the state of the glottis, seen with the laryngoscope, in a *quietly-breathing, healthy person* (viz., an opening of middle size, but larger than that seen in the dead body, with but very little dilatation in inspiration and equally insignificant constriction in expiration), is the result of a *permanent automatic* "half-tension" (Luschka, *l. c.*, p. 132) of the abductor muscles, *superadded* to the *natural tension* of the elastic membrane (which tension alone is best illustrated by the "cadaveric position" of the vocal cords, *i. e.*, the state of the glottis seen after death), and that a *further* contraction of the glottis-openers, involving a greater dilatation of the glottis, might, in accordance with the general laws of the mechanism of respiration, be effected *voluntarily* or *involuntarily*, as the case may be.

it consists in reality of a bundle of strictly differentiated fibres, bound together simply by a common nerve-sheath, and actually differentiated throughout their peripheral course, in fact having ganglionic centres of their own?

This physiological question, which is no doubt not only of the greatest interest in itself, but, it will be seen, also of the highest importance for the pathological question, which forms the subject of this paper, has scarcely met with its due share of attention. It is simply taken as granted that the recurrent laryngeal nerve supplies the greater part of the motor innervation of the larynx, and here the curiosity of most observers has ceased.<sup>1</sup> This is not the occasion to attempt to solve the question from the physiological point of view, but I may state at once that the pathological facts to be communicated later on strongly support the greater probability of the second hypothesis, viz.: that the fibres of the recurrent laryngeal nerve are differentiated in the nerve-centre itself, and only surrounded by a common neurilemma.

It will be seen that even this hypothesis is by no means sufficient to explain *all* the pathological phenomena with which we shall have to deal in this paper; but if it be accepted so far, we have at once a *locus standi* for the rejection of some conclusions concerning the effects of a lesion or disease set up in the centres or in the trunks of the spinal accessory, pneumogastric, or recurrent nerves, which might

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<sup>1</sup> An incidental allusion to this question will be found in a very interesting annotation in *The Lancet*, 1878, vol. i, p. 584, and in my reply to it, *ibid.*, p. 630. Schech (*l. c.*, p. 42) believes it very probable that the abductor possesses, besides those fibres originating from the pneumogastric and accessory nerves, others, which are in some form of relation with the respiratory centre, and are stimulated from this source, but says that this hypothesis has not been proved up to the present. Merkel ("Stimm- und Sprachorgan," 1863, p. 154) makes a statement similar to that of Bosworth to be presently quoted, but more guarded. He says, after speaking of some other controversial points in relation to the nervous supply of the larynx: "It is not less doubtful, whether the muscles closing the glottis, on the one hand, and the glottis-openers, on the other, are presided over by specifically differentiated nerves (Magendie, H. Ley), although it seems to me personally at least very probable, that the glottis-openers, which are in a state of involuntary tension, must be presided over by nerves of a different kind and of another origin than the glottis-closers, which are almost entirely under the control of the will." Bosworth says (*l. c.*, p. 461): "Reasoning from analogy, we are justified in the conclusion, that this glottis-opening function of the larynx is presided over by an independent ganglionic centre, situated in the brain, but which neither physiological experiment nor pathological investigation has as yet been able to locate."

be very naturally made with regard to the anatomical relations of the single terminal branches of the recurrent laryngeal nerve. These anatomical relations are as follows :

The recurrent nerve is of considerable length. "The *left* is longer than the right in consequence of its being given off much later than the right from the trunk of the pneumogastric nerve. It springs from the latter at a very sharp angle, whilst the pneumogastric passes in front of the end of the arch of the aorta ; winds round the transverse part of the arch, outside of the ligamentum arteriosum ; passes between the aorta and left bronchus to the posterior part of the former ; leaves this between the origin of the carotis primitiva sinistra and the truncus anonymus, and ascends in front of the œsophagus in the groove formed by this part and the trachea." . . . . .

"The *right* recurrent nerve is given off from the trunk of the pneumogastric as the latter descends in front of the origin of the subclavia dextra. It winds round the lower and posterior convexity of this vessel, crosses the carotis dextra behind its origin, and ascends behind this vessel, running toward the middle line in the groove formed between the right lateral wall of the trachea and the œsophagus."<sup>1</sup>

Although during this long course several twigs are given off by the nerve (rami cardiaci inferiores, tracheales and œsophagei superiores), yet it is only *when in close proximity to the larynx itself* that those branches are sent off which serve as motor nerves to the individual muscles of the organ. These are :

*a. The posterior crico-arytænoid nerves.* As the trunk of the inferior laryngeal nerve is passing close along the posterior crico-arytænoid muscle, it gives off two branches, one of which passes above, the other beneath the crico-arytænoid articulation, under the lateral edge of the muscle. The former of these two branches commences to run obliquely toward the median line at the border of the lower and middle third, the latter at the border of the middle and

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<sup>1</sup> This as well as the following anatomical quotations are taken from Luschka, "Der Kehlkopf des Menschen," Tübingen, 1871, pp. 164-166.

upper third of this edge, between the plate of the cricoid cartilage and the substance of the muscle. The first branch having given twigs to the lower half, the second to the upper half of the muscle, both combine and form a small trunk, which becomes visible as the

*b. Nervus arytænoideus transversus* on the upper border of the posterior crico-arytænoid muscle. This nerve crosses the upper edge of the cricoid plate close to the inner end of the crico-arytænoid articulation, and distributes its final branches within the transverse arytænoid muscle, which is thus supplied with nerves from both sides.

*c. The nervus crico-arytænoideus lateralis* is a slender twig, which is given off by the trunk of the recurrent nerve, whilst passing either across the middle of the muscle of the same name, or under some of its bundles.

*d. The nervi thyreo- and ary-epiglottici* are given off by the trunk at the upper border of the crico-arytænoid muscle. They send forth their extremely slender terminal twigs into the muscles of the same name.

*e. The nervus thyreo-arytænoideus* is the final branch of the recurrent laryngeal nerve. It descends between the lateral crico-arytænoid and thyreo-arytænoid muscles, and is concealed from view midway between the thyroid cartilage and the processus muscularis of the arytænoid cartilage. In the depth of the gap left between these muscles, the trunk of the nerve splits up, like a brush, into thin twigs, which radiate from below into the substance of the muscle of the vocal cord proper.

This description clearly establishes the previous statement, viz., *that the individual muscular branches are only given off by the trunk of the inferior laryngeal nerve when close to the larynx.*

Considering this anatomical fact, and another equally plain one, viz., that the diameter of the trunk of the nerve is a very small one (1 mm. when close to the larynx, according to Luschka), it is very tempting to draw at once the conclusions alluded to above, viz.:

1. That any lesion or disease affecting the nerve from its centre to the spot where it gives off the first branch for

the posterior crico-arytænoid muscle, must of necessity affect *all* the laryngeal muscles (with the exception, of course, of the crico-thyroid muscles, and perhaps of the epiglottidean muscles).

2. That, on the other hand, any impairment of mobility—if not due to mechanical or myopathic influences<sup>1</sup>—of a single one or some of the laryngeal muscles seems to point out clearly that the cause of this impairment must be a *local* one, due to injury or disease of the *respective nerve twigs*.

These conclusions, as sketched here, cannot be rejected *a priori* as unreasonable. The anatomical facts seem to support them strongly, and although it was known at a very early period in laryngological studies that the abductor and adductor muscles could become separately affected,<sup>2</sup> yet the possibility has been emphatically denied that such a *partial* paralysis could be due to either *central* causes or affections of the *main nerve trunks*. Navratil,<sup>3</sup> the champion of this opinion, expresses himself as follows:

“The question whether, under these circumstances, the paralysis be a central or a peripheral one, can be easily decided. Considering that there cannot be any disease-producing cause in the centre which would act upon the adductors alone, without affecting simultaneously the abductors, any central disease can be excluded with certainty. The same is to be said of the pneumogastric and recurrent nerves, and I dispute Gerhardt’s view, that any pathological cause could affect just that part of the recurrent nerve (the diameter of the entire nerve is very small) from which (?) the narrowing and the tension (?) are effected.”<sup>4</sup>

I do not know whether this view is still defended by Navratil, or whether he has any followers in the camp of laryn-

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<sup>1</sup> See my paper “On Mechanical Impairments of the Functions of the Crico-Arytænoid Articulation,” etc. *Med. Times and Gazette*, 1880, vol. ii, Nro. 1577 and *seq.*

<sup>2</sup> Gerhardt, “Studien u. Beobachtungen über Kehlkopflähmung.” *Virchow’s Archiv*, vol. xxvii, p. 88.

<sup>3</sup> *Berliner Klin. Wochenschrift*, 1869, pag. 383.

<sup>4</sup> It would confuse my subject if I entered upon any discussion of the other very controversial statements made in this quotation and the lines following it in the original.

gologists, but I think it is still held by a great many general practitioners.

Yet it is openly fallacious in consequence of the omission of a very simple but very important consideration, viz., that we must distinguish between a *complete* and an *incomplete* as well as between an *acute* and a *gradually progressive* lesion of the nerve!<sup>1</sup>

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<sup>1</sup> It is certainly remarkable that the same omission has led Bosworth to make a statement, in part *directly opposed* to that of Navratil, but equally inadmissible, viz.: to argue that *all* cases of what he well terms "primary" paralysis of the abductor muscles must be of a *central* nature (*l. c.*, p. 476.). In his argument on this point he says (*l. c.*, p. 475): "The question arises, does the seat of the original morbid changes which produce the paralysis lie in the nerve-trunks? I do not see how this view of the subject *can be entertained for a moment*. Any disease of the recurrent laryngeal nerve, *which has progressed so far as to destroy its conductivity* (the italics are my own), must destroy and paralyze all the muscles which it supplies." The *conclusion* of this last sentence would be certainly quite correct and unattackable if the *premise* were beyond doubt; but it is just here, in the presumption that the disease in question must be judged from those cases in which it has "progressed so far as to destroy the conductivity of the recurrent laryngeal nerve," that I think Dr. Bosworth's argument is open to criticism. Must a disease affecting a nerve, or a pressure exercised upon a nerve, destroy, *of necessity*, the conductivity of *all* its fibres. If so, I see *no explanation at all* for the cases in which, during life, paralysis of one or of both the abductors *alone* was observed and in which, after death, compression of the *trunk* or *trunks* of the recurrent nerves was found. (See Cases 3, 4, 5, 9, 16, 17, 20, 22 of the following literary retrospect.) But the essential point in which I differ from Dr. Bosworth, is that I believe that in such cases it is *impossible* that *all* fibres of the nerve should have been destroyed. *If* they were, we would simply, as he himself justly observes, find trophic changes in *all* the muscles supplied by the nerve. But here we are in possession of positive facts: During life we find paralysis of the *abductors alone*; after death, evidence of compression of the *trunks* of the recurrent nerves, trophic changes of the *abductors only*, *integrity* of the other laryngeal muscles. In other words, clinical observation as well as the results of the *post-mortem* examination *prove*, that none but the abductor fibres *can* have suffered. In the face of such facts it seems to me that any theory which attempts to explain *uniformly* the pathology of this disease by a presumption of *central* changes having taken place in *all* cases entirely collapses. Nor do I think, as is admitted by Dr. Bosworth (*l. c.*, p. 476), that because it is "among the possibilities," that a pressure may "discriminate among the nerve-fibres,"—that he is justified in altogether rejecting the possibility of the original morbid changes, which produce the paralysis, *ever* lying in the nerve-trunks (see above), and this simply on account of the—*theoretically*—small probability that such a discriminating pressure should affect *both* recurrent nerves in a large series of cases. That such a contingency is *rare*, is proved by the small number of cases hitherto recorded; but it certainly has happened *repeatedly*, and as no theory of *central* origin would account for these cases, I believe that a theory of a *uniformly* central origin of bilateral paralysis of the abductors is untenable, though admitting, at the same time, that in a *large proportion* of these cases the original morbid changes, which produce the paralysis, are no doubt to be found in the brain.

I here take leave of Dr. Bosworth's important paper. There are several more points in it which invite discussion, but I am afraid that these foot-notes, which are being added to my paper four months after its completion, give it much more of a polemical character than I could have wished. Still, I feel that, with regard to the importance and comparative novelty of the subject un-

If we have an acute *complete* lesion, such as is produced by, say transverse cutting of the pneumogastric or recurrent nerves, experiments on animals,<sup>1</sup> as well as occasional observations<sup>2</sup> on human beings, have shown beyond doubt that the consequences are such as would be expected theoretically, viz., *total loss of the functions of all the laryngeal muscles* (with the exception of the crico-thyroid muscles), with the usual results and symptoms. So far, therefore, facts and theoretical conclusions quite agree with each other.

Matters, however, become entirely different, if we have to deal with either an *incomplete acute* or an *incomplete gradually progressive* lesion. The former of these two conditions is certainly an extremely rare one in practice, though it can be easily produced by experiment; the latter, on the other hand, is the form which is not only practically the most important, but almost the only one which occurs in reality.

For if we set aside for a moment the rare contingencies in which the nerve centres or trunks suffer from traumatic influences, or in which the centres are suddenly disabled from fulfilling their functions by certain acute poisonous influences, or by the still rarer occurrence of a hemorrhage, or the bursting of an abscess into the floor of the fourth ventricle,<sup>3</sup> almost *all* the other causes which can be thought of as occurring in practice are such as belong to the category of *slowly progressive* and—at any rate *at first*—*incomplete* lesions. Implication of the roots of the pneumogastric and spinal accessory nerves in central diseases, such as syphilitic processes, progressive bulbar paralysis, disseminated cerebro-spinal sclerosis, locomotor ataxy with final participation of the medulla oblongata; tumors or aneurisms within the

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der consideration, it would be wrong to take no notice of so important a paper as that of Dr. Bosworth, and as, unfortunately, our opinions do not agree on some important points, I have considered it a duty to offer the reasons for my objections to some of his ideas.

<sup>1</sup> Schech, *l. c.*, p. 31, and *seq.*

<sup>2</sup> Fano, "*Schmidt's Jahrbücher*," vol. xci, p. 19; Kappeler, *Archiv der Heilkunde*, 1864, p. 271; Mackenzie, *Brit. Med. Journal*, December 24, 1870, and "Diseases of the Throat and Nose," p. 433, etc.

<sup>3</sup> In the strict sense of the term the last two contingencies might as well be said to belong to the class of "traumatic" causes.

skull, pressing on the spinal accessory nerve; tumors of the neck; aneurism of the carotids; goitres, cancers, gummata; aneurisms of the arch of the aorta, or the subclavia dextra; mediastinal tumors pressing on the trunk of the pneumogastric nerve; tumors of a similar nature and position pressing on the trunk of the recurrent nerve; and in addition to these, carcinoma of the œsophagus, pleuritic adhesions implicating the right recurrent nerve close to the apex of the right lung in phthisis, and large pericardial exudation (Bäumler), are all processes, which may lead to lesions of the motor innervation of the larynx, and different as they are from each other in nature and in progress, yet have one point in common, that if they implicate these centres or these trunks, the implication is a comparatively *slow* and *gradual* one. The small size of the nerves does not alter this fact. Of course a smaller nerve will be more quickly implicated by a carcinoma, or suffer earlier from a pressure exercised upon it, than a large one; but at all events there must be some time in which a small nerve as well as a larger one *begins* to experience the effects of the disease-producing cause encroaching upon its functions.

The question now presents itself: What are the early symptoms in such cases?

Here we may consider the two hypotheses introduced at the commencement of this paper.

If we believed that *all* the fibres of the recurrent nerve were identical and not differentiated, but that different stimuli coming from either the same or from different centres, could be transmitted through them, it seems to me that in *every* case in which there is an incomplete impairment affecting the roots or trunks of the spinal accessory, pneumogastric, or recurrent nerves, we could reasonably expect *one and the same* sequence only, viz.: *diminution of ALL the functions of ALL the laryngeal muscles supplied with motor fibres by the recurrent laryngeal nerve, and this diminution in proportion to the number and strength of the fibres disabled by the disease-producing cause.* In other words, every paralysis of the recurrent nerve, unless acute and complete from its commencement, ought to begin with

loss of the adductive *as well* as of the abductive power, and this equal impairment should progress *pari passu* with the disablement of the still conducting fibres, until at last, all of them having become devoid of conducting elements by some external cause or internal retrogressive metamorphosis, the stage of complete paralysis of the nerve with immobility of the corresponding vocal cord in the cadaveric position is attained.

Now I must say, that although for several years past this question has interested me very much, and although I have been seeking a case in which the symptoms should develop in this way, I have not been able to find a single one, while during the same time I have seen several cases in which the paralysis developed under my eyes, and in which the progress was different. Yet I am not disposed to dispute, after the fashion of some writers of the day, the possibility of an occurrence, for the sole reason that it never occurred to myself, and I am quite ready to believe that a paralysis of the recurrent nerve which finally becomes complete, can manifest itself during its beginning and progress by the symptoms sketched above.

But what I wish most decidedly to contradict is the probability of the hypothesis first alluded to, by which such an occurrence could be explained, viz. : that the fibres of the nerve are *all identical*, and that *different* stimuli can be transmitted through *all* of them, exciting at one time the action of one set of muscles, at another the action of their antagonists.

No doubt this hypothesis explains why and how in such a hypothetical case of gradually progressive paralysis the action of all the laryngeal muscles should gradually become weaker, and more and more insufficient; but on the other hand its own indefensibility becomes clear from the considerations already alluded to.

If in reality all the fibres of the recurrent nerve were identical, the loss of some of them by any pathological process must, as I have tried to explain, *under all circumstances* be followed by the *same* consequences. The *intensity* of these consequences might vary according to the number of the disabled fibres, and perhaps according to the rapidity

of the pathological process ; but in *all* cases the differences *could* only be *quantitative*, never *qualitative*.

In other words, if this hypothesis were correct, it would not admit of a *single* exception to the rule. A single exception, a single good observation, proving that in a case of gradually progressive paralysis of the roots or the trunks of the accessory, pneumogastric, and recurrent nerves one set of laryngeal muscles was either before their antagonists or even exclusively paralyzed, annihilates the entire hypothesis of the homogeneousness of the filaments of the recurrent nerve, for if they were really homogeneous, the laryngeal muscles could *never* be separately affected by a lesion involving the trunk of the nerve itself.

Now we have not one, nor a few, but many cases on record, in which clinical observation and the *post-mortem* examination have actually shown that, although the disease-producing cause acted upon the whole nerve-trunk, yet *one* set of laryngeal muscles only became affected, or one much more than the other, so that it is sufficient to refer to any of the text-books of laryngology or to the medical journals of the last decade ; moreover, I have but little doubt, that almost every reader of this paper has observed if not published cases of this sort as occurring in his own practice.

I do not think that there is any possibility of reconciling this positively ascertained fact with the theory of the homogeneousness of the recurrent nerve, and I therefore believe that this theory must be completely given up.

The second hypothesis appears the more probable, and one *a priori* harmonizing much more with the complexity and delicacy of the vocal functions of the laryngeal muscles, viz. : that the filaments of the recurrent nerve are strictly differentiated throughout the course of the pneumogastric nerve and even possess ganglionic centres of their own.

The adoption of this hypothesis at once gives a clue to the explanation of the frequent clinical observations, that in cases of intrinsic nerve disease as well as of external mischief to the nerve, and in cases of central as well as of peripheral lesion, one set of the muscles is earlier affected than the other or even exclusively. If, for instance, a dis-

seminated sclerotic affection of the brain should happen to affect those ganglionic centres only which form the nuclei of the abductor filaments of the recurrent nerve; if a tumor of the neck should happen to press on those nerve-fibres only which supply the crico-arytænoideus lateralis, the thyreo-arytænoideus, and the arytænoideus proprius muscles,<sup>1</sup>—it would not need further explanation to prove that in the first instance we would see, laryngoscopically, the vocal cords not in the cadaveric but in the phonatory position, because the posterior crico-arytænoid muscles only were paralysed, and that, on the other hand, in the second instance we would see the glottis widely open, and meet with complete aphonia in consequence of the inability of the solely paralysed adductor muscles to bring the vocal cords together for the purpose of phonation. In each of the two cases this state of things could remain stationary (viz.: if the pathological process occasioning the paralysis came to a standstill), or could lead to complete paralysis with its consequences (viz.: if the antagonistic centres or fibres, which were left free at the beginning, became also affected later on).

I find myself thus far in complete accord with v. Ziemssen who, although not entering upon any discussion on the *modus operandi* of these gradual and incomplete paralyses, expresses himself as follows:<sup>2</sup>

“Paralysis of individual branches of the recurrent, which go to the laryngeal muscles and to the mucous membrane of the trachea and the larynx, may arise through incomplete lesions of the trunk of the recurrent; for instance, when it is exposed to unequal pressure, or when, for any other cause, the nerve-filaments are affected in an unequal degree by degenerative changes. This generally takes place at the beginning of a severe lesion of a nerve, gradually leading to complete paralysis of conduction—for instance, owing to aneurism or carcinoma—and we can therefore almost always distinguish between an initial stage of incomplete paralysis—now more pronounced in one muscle,

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<sup>1</sup> This example has been chosen only for the sake of an illustration. It will be shown hereafter that, so far as I know, no such case has thus far been reported.

<sup>2</sup> *Cyclopædia* (English edition), vol. vii, p. 948.

again in another,—and the stage of total paralysis.” Similar views are held, I believe, by the majority of laryngologists, whilst the question has not met with any special consideration at the hands of the medical profession at large.

It would seem, then, that the earlier symptoms in cases of incomplete, slowly progressing paralysis entirely depended upon the question, *which* fibres have been accidentally first attacked by the pathological process occasioning the paralysis, and the natural conclusion would be that we sometimes should expect early lesion of the abductors, at others of the adductors.

This is, I believe, the general point of view accepted at the present time by laryngologists, and from this point of view it is easily understood, why those who have met with cases of *bilateral* paralysis of the abductor muscles, the cause of which was to be traced not to some *local* or *myopathic*, but to some *central* or *nerve-trunk* lesion, should have looked upon their cases as mere pathological curiosities, and should have tried to explain by more or less ingenious hypotheses, why in their individual case the pathological process, although acting upon the whole of the nerve, should have affected the abductor filaments only.

Now I do not wish to augment the number of these hypotheses by the addition of a new one of my own, but simply to state distinctly and separately once more the following *fact*, previously proclaimed by Morell Mackenzie and myself :

“ *The occurrence of an isolated paralysis of the abductor filaments of the recurrent nerve in cases in which the roots or trunks of the spinal accessory, pneumogastric, and recurrent nerves are injured or diseased, is not an isolated pathological curiosity. There is a distinct proclivity of the abductor fibres to become affected, in such cases, either at an earlier period than the adductor fibres, or even exclusively.*”

A statement like this can only be proved in the following way: I must bring forward a comparatively large number of clinical observations and *post-mortem* examinations, showing that isolated paralysis of the posterior crico-arytænoid muscles was the result of disease or injury to the centres

and nerve-trunks, or that at any rate the paralysis of these muscles was earlier, and respectively more developed than that of their antagonists, and this number must not be compensated for by an equal or approximatively equal number of observations proving the occurrence of a primary affection of the adductor fibres under similar circumstances.

I proceed to the first part of my proof and quote some cases belonging to the first category.

CASE 1 (Gerhardt<sup>1</sup>). *Chronic disease of the brain* of doubtful nature. The left vocal cord immovable in the median line.

CASE 2 (Gerhardt<sup>2</sup>). Probably *encephalitic process* in the left half of the brain. Right vocal cord immovable in the median line.

CASE 3 (Gerhardt<sup>3</sup>). *Tuberculosis pulmonum*. Incomplete paralysis of the left posterior crico-arytænoid muscle. *Post-mortem* examination : left pneumogastric nerve completely imbedded in thickened connective tissue and bent backward by some swollen lymphatic glands. The corresponding recurrent nerve intimately connected with a melanotic lymphatic gland. The left posterior crico-arytænoid muscle in a state of fatty degeneration and atrophy. The adductors on the same side also degenerated, but not to such a degree as the abductor. Brain and medulla oblongata healthy.

CASE 4 (Mackenzie<sup>4</sup>). *Paralysis and atrophy of the abductor of the left vocal cord, caused by pressure of a malignant tumor of the thyroid gland on the left recurrent nerve. Duration six years (!)* Left vocal cord fixed in median line. *Post-mortem* examination : Cancerous tumor two inches in breadth, reaching from the arch of the aorta to the cricoid cartilage, which had "*completely incorporated* the left recurrent nerve just where it passes up beneath the upper border of the arch of the aorta. The left crico-arytænoideus posticus was completely atrophied, only a few pale thin fibres could be seen at its lower and inner part, whilst its fellow was large and well nourished."

CASE 5 (Mackenzie<sup>5</sup>). *Paralysis of the abductor of the left vocal cord caused by aneurism of the arch of the aorta pressing on the left recurrent nerve.* Left vocal cord fixed near the median

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<sup>1</sup> *L. c.*, p. 307, case x.

<sup>2</sup> *L. c.*, p. 309, case xii.

<sup>3</sup> *L. c.*, p. 310, case xiii., and postscript, p. 318.

<sup>4</sup> "Hoarseness, Loss of Voice," etc. Case xxix, p. 39.

<sup>5</sup> *Ibidem*. Case xx, p. 41.

line. *Post-mortem* examination: Aneurism of the arch of the aorta. "The left recurrent nerve was traced from its origin from the vagus round the arch of the aorta, as far as the sac of the aneurism, with which it became incorporated and could not be followed further." The left posterior crico-arytænoid muscle was completely atrophied, only a very few thin, pale fibres being apparent.

CASE 6 (Semon<sup>1</sup>). Boy, æt. 15. History of *fit and unconsciousness* 7 years previously, after which he stammered for a considerable time. Voice has ever since remained hoarse. Left vocal cord immovable in the median line. After protracted electric treatment slight improvement in mobility.

CASE 7 (Semon<sup>2</sup>). Woman, æt. 55. *Aneurism* of the first part of the arch of the aorta, of the innominate and of the carotis communis dextra. The abductive power of the right vocal cord, which stands nearly in the median line, is much diminished, and the paresis of the right abductor became more complete during the short time the case was under observation. The patient soon gave up attending the hospital.

CASE 8 (Semon<sup>3</sup>). Woman, æt. 40. *Fibrous nodulated struma*. The abductive power of the left vocal cord much diminished. It stands close to the median line. Injections of tinct. iodi into the goître produce a considerable diminution in the size of the tumor, but the mobility of the left vocal cord does not improve, although later on the local applications, electricity, and subcutaneous injections of strychnia are made use of.

CASE 9 (Riegel<sup>4</sup>). *Chronic pneumonia, bilateral paralysis of the abductors*. Boy, æt. 6. Duration of the laryngeal symptoms, from the beginning until the death of the patient, *three years*. Result of the *post-mortem* examination: Both recurrent nerves imbedded in dense connective tissue; only the posterior crico-arytænoid muscles in a state of atrophy and fatty degeneration, the other laryngeal muscles *healthy*. Microscopic examination of the recurrent nerves shows, above the points of adhesion, atrophy and fatty degeneration of the majority of the filaments; but on both sides still a number of *normal, well-preserved* fibres is found.

CASE 10 (Penzoldt<sup>5</sup>). *Tertiary syphilis. Repeated apoplectic attacks. Bilateral paralysis of the abductors*. Woman, æt. 61.

<sup>1</sup> Unpublished.

<sup>2</sup> Unpublished.

<sup>3</sup> Unpublished.

<sup>4</sup> Berlin. Klin. Wochenschrift, 1872. Nos. 20 and 21, and 1873, No. 7.

<sup>5</sup> "Deutsches Archiv für Klin. Medizin," Bd. xiii, p. 107.

Duration of the disease, 1½ months. Death. Result of *post-mortem* examination: *Roots of both pneumogastric and accessory nerves strangely thin and in a state of gray discoloration.* (Similar changes in other cerebral nerves.) *Both posterior crico-arytænoid muscles pale, brownish-red.* The left pneumogastric and recurrent nerves somewhat *slender and of a grayish color.* Microscopic examination of these nerves shows the majority of the primitive fibres as normal, but between them there are filaments which are distinctly broader than normal, and the neurilemma of which is in a state of distinct fatty degeneration. The interstitial connective tissue is augmented and contains a great quantity of fat corpuscles.

CASE 11 (Paul Koch<sup>1</sup>). *Compression of both recurrent nerves by enlarged bronchial glands. Bilateral paralysis of the abductors.* Girl, æt. 24. Diagnosis *per exclusionem.*

CASE 12 (Mackenzie<sup>2</sup>). *General paralytic symptoms. Bilateral paralysis of the abductors.* Man, æt. 44. General paralysis affecting both extremities 16 months before admission. Bilateral paralysis of the posterior crico-arytænoid muscles. No change in the laryngeal muscles during the three months he was under observation.

CASE 13 (Mackenzie<sup>3</sup>). *Cerebro-spinal symptoms. Bilateral paralysis of the abductors.* Repeated epileptic attacks, involuntary motions, and oozing away of the urine. Nearly complete immobility of the vocal cords in the phonatory position. Duration of the laryngeal symptoms not distinctly ascertained. Death. No *post-mortem* examination.

CASE 14 (Mackenzie<sup>4</sup>). *Syphilitic disease of the brain. Bilateral paralysis of the abductors.* Manifold evidence of central disturbance. Seizures, nausea, vomiting, pains, and loss of coördinative muscular power in legs, loss of eyesight, vertigo. Partial paralysis of the posterior crico-arytænoid muscles. Fifteen years previously primary venereal sore, followed by eruption. Iodide of potash speedily improved all the symptoms.

CASE 15 (Mackenzie<sup>5</sup>). *Imperfect paralysis of the right leg. Bilateral paralysis of the abductors.* Dyspnœa for several years. Sudden death. No *post-mortem* examination allowed.

CASE 16 (Mackenzie<sup>6</sup>). *Pressure on both recurrent nerves by aneurisms. Bilateral paralysis of the abductors.* Man, æt. 51.

<sup>1</sup> "*Annales des Maladies de l'Oreille et du Larynx*," 1878, Nos. 6 and 7.

<sup>2</sup> "Diseases of the Throat and Nose," vol. 1, page 428.

<sup>3</sup> *Ibidem*, p. 429.

<sup>4</sup> *Ibidem*, p. 429.

<sup>5</sup> *Ibidem*, p. 429.

<sup>6</sup> *Ibidem*, p. 443.

Death. Result of *post-mortem* examination: "One very large aneurism, commencing in the ascending aorta and involving the innominate and right subclavian artery, pressed, at its upper and outer part, on the right recurrent nerve and slightly on the right pneumogastric nerve. The second smaller aneurism involved the under and posterior surface of the descending portion of the arch of the aorta, and slightly pressed on the left recurrent nerve." Both posterior crico-arytænoid muscles in a state of atrophy and fatty degeneration. The other laryngeal muscles healthy.

CASE 17 (Mackenzie<sup>1</sup>). *Pressure on both recurrent nerves by cancer of the œsophagus. Bilateral paralysis of the abductors.* Man, æt. 67. Death. *Post-mortem* examination: Both recurrent nerves passed into a cancerous growth, originating from the œsophagus. Their exit from this mass could not be traced. The abductor muscles were found to be greatly reduced in size and presented signs of fatty degeneration. The other muscles of the larynx were healthy with the exception of the left thyro-arytænoid muscle, which showed signs of molecular transformation.

CASE 18 (Mackenzie<sup>2</sup>). *Pressure on both recurrent nerves by an enlarged thyroid gland. Bilateral paralysis of the abductors.* Boy, æt. 15. Duration of the laryngeal symptoms, four months. The treatment of the bronchocele resulted not only in a cure of this affection, but also in restoration of the function of the paralyzed abductor muscles.

CASE 19 (Mackenzie<sup>3</sup> and Semon<sup>4</sup>). *Pressure of an aneurism on both recurrences, and compression of the nerves by dense connective tissue. Bilateral paralysis of the abductors.* Man, æt. 60. Duration of the laryngeal symptoms, till death, six months. *Post-mortem* examination: Hypertrophy of the heart, aneurismal dilatation of the first part of the aorta, chronic pneumonia, and enlargement of the bronchial glands, which were enveloped in abundant firm connective tissue which compressed both recurrent nerves. Atrophy of both abductors; the other laryngeal muscles were apparently healthy.

CASE 20 (Semon<sup>5</sup>). *Aneurism of the arch of the aorta pressing on both recurrent nerves. Incomplete but progressive paralysis of the abductors.* Man, æt. 51. Only complaint dyspnœa and pe-

<sup>1</sup> *Ibid.*, p. 443.

<sup>2</sup> *Ibid.*, p. 444.

<sup>3</sup> *Ibid.*, p. 444.

<sup>4</sup> "Transactions of the Clinical Society," vol. xi, 1878, p. 149.

<sup>5</sup> Alluded to in "German edition of Mackenzie's work," foot-notes, pp. 587 and 720, and by Dr. W. M. Ord, in "St. Thomas' Hospital Reports," vol. x, 1880, p. 131.

cular alteration of voice beginning three months before he came under observation. Incomplete bilateral paralysis of the abductors, more marked on the left than on the right side, progressing, during the two months which elapsed before the death of the patient took place, *almost daily under my eyes*. At the time of the patient's death the left vocal cord remained immovable in the median line, while the right still moved *slightly* outward. [At the same time the level of the left vocal cord was *lower* than that of the right, and its inner border slightly excavated.] Death from rupture of the aneurism into the œsophagus. *Post-mortem* examination : Large, curiously formed aneurism of the upper and posterior part of the arch of the aorta, beginning at the commencement of the convexity formed by the vessel when passing from the ascending into the transverse part, and extending over two-thirds of the transverse part. The left recurrent nerve is firmly implicated for a considerable distance by the wall of the aneurism. It does not, however, to the naked eye<sup>1</sup> seem to be atrophied in its parts situated above the aneurism, but, on the contrary, somewhat swollen and congested. The right recurrent nerve is pressed upon at the point where it is given off by the right pneumogastric nerve, and in the very beginning of its course by that part of the aneurism projecting to the right. The nerve is apparently not changed. The left posterior crico-arytænoid muscle is so completely atrophied that but a few thin, pale, and yellowish fibres are seen at its inner insertion ; the right is also atrophied, but to a considerably less degree. The other laryngeal muscles are apparently normal, with the exception of the left crico-thyroid muscle, which is considerably discolored and atrophied. The left superior laryngeal nerve is intact.<sup>2</sup>

CASE 21 (Semon<sup>3</sup>). *Disseminated cerebro-spinal sclerosis. Bilateral paralysis of the abductors.* Gait of the character of locomotor ataxy ; numbness of (now) both legs ; incontinence of urine ; slight left facial paralysis ; slight nystagmus ; inequality of the pupils,—of late ; numbness of the mucous membrane of the upper lip. The laryngeal paralysis, *which has remained unchanged ever since the beginning of the observation, i. e., 2¾ years ago*, preceded all the other symptoms for *nearly two years* !

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<sup>1</sup> Unfortunately no microscopical examination was made.

<sup>2</sup> Was, in this case, the motor innervation of this muscle derived from the recurrent nerve instead of the superior laryngeal? (v. Ziemssen, *l. c.*, German edition, p. 445.)

<sup>3</sup> "Transactions of the Clin. Soc.," 1878, vol. xi, p. 146.

These two facts, viz., the permanence of the *bilateral* paralysis of the *abductors* only, and the *long interval* between the appearance of this and any of the other symptoms, made me, when I first published this case, nearly three years ago, disinclined to believe in a *causal* connection between the laryngeal and the other symptoms.<sup>1</sup>

But the case has ever since been before my mind, and has, in fact, led me to the considerations of which the present paper is the outcome. Having convinced myself that *bilateral* paralysis of the abductors *only* might be the result of a central lesion affecting the roots of the accessory and pneumogastric nerves (Cases 10, 12, 13, 14), and that a lesion affecting the roots or trunks of these nerves and of the recurrent nerve, might result in such an *isolated* paralysis, which remains stationary *for a long time* and does not necessarily lead to retrogressive changes of the other laryngeal muscles, I cannot refrain longer from admitting that this is *most probably* a very unusual case of multiple cerebrospinal sclerosis, in which the first and for a long time the only symptom was bilateral paralysis of the abductors.<sup>2</sup>

CASE 22 (L. Weber<sup>3</sup>). *Bilateral paralysis of the abductors after typhoid fever*. Tracheotomy. 2½ months later, pneumonia and nephritis. Death. *Post-mortem* examination: Besides other changes in different parts of the body, tracheitis and purulent peri-tracheitis were noticed. *Both recurrent nerves were found to have been embedded entirely in this purulent infiltration*. The nerves did not show any considerable changes to the naked eye, with the exception of appearing somewhat flattened; microscopically, the only change to be detected was the *diminished volume of some of the axe-cylinders*. The abductor muscles themselves appeared perfectly healthy to the naked eye and under the microscope.

<sup>1</sup> See *The Lancet*, vol. i, 1878, p. 630.

<sup>2</sup> Whilst correcting the proof sheets of this paper, I find that Dr. Hering, of Warsaw, related at the International Congress of Laryngology, held last year at Milan, a case of paralysis of the posterior crico-arytænoid muscles, "followed nine months afterward by symptoms of labio-glosso-pharyngeal paralysis of bulbar origin, which there was every reason to believe was due to syphilis." (These ARCHIVES, vol. i, 1880, p. 388.) The shortness of the communication does not, of course, permit of any definite conclusions being drawn; but even from this short report the case appears to belong to the category under consideration, and to be very similar to the one just referred to.

<sup>3</sup> *Berl. Klin. Wochenschrift*, Nro. 29, 1880, p. 412.

We have here then a considerable number of clinical observations, many of them authenticated by the discovery on the *post-mortem* table of anatomical changes corresponding to the symptoms observed during life, and proving that pathological processes, implicating the nerve-centres or the nerve-trunks themselves, are frequently manifested by actual changes in the abductor fibres and muscles, either exclusively or better developed than in the antagonistic muscles. I need not say that the above list by no means claims to be complete. It seemed to me that it was only necessary to show that isolated paralysis of the abductors in consequence of causes affecting centres or trunks was *not* an accidental curiosity, but occurred comparatively *often*. I am sure that it would have been easy to augment considerably the above list,—especially as far as *unilateral* paralysis of a posterior crico-arytænoid muscle from central or nerve-trunk lesions was concerned,<sup>1</sup>—had I made an extensive search through the literature of laryngeal paralysis. But I considered this the less necessary, because the number of 22 cases becomes important and considerable, if compared with the number of cases in which a central or trunk lesion of the nerves under consideration was found to have led to isolated paralysis of the *adductors*.

For it must not be forgotten that I have thus far only fulfilled *one* part of my task: I have shown that in many cases disease of the centres or pressure upon the trunks *can* lead to isolated paralysis of the *abductors*. The question now is: Is the number of these cases covered by a similar number, in which, under the same circumstances, the *adductors* only became affected?

The answer to this question is simple and will, no doubt, be surprising to many readers of my paper:

Not only have I *never* seen such a case, but in the whole range of laryngeal literature, which is known to me, I have been unable to find a SINGLE case, in which primary organic<sup>2</sup>

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<sup>1</sup> I remember in my own hospital practice, several, at least three more cases of aneurism of the aorta with *phonatory* position of the left cord, of which I have no notes at hand.

<sup>2</sup> I purposely say “organic” disease of the brain, or nerve-trunks, because it is a most remarkable fact, *that the so-called “functional” neuroses show, on the*

disease of the brain or of the nerve-trunks was proved by clinical observation or the result of the *post-mortem* examination to have been the cause of *isolated* paralysis of the *abductors*!<sup>1</sup>

I must say that I was not a little astonished, when I reached this result. The laryngeal literature, however, is already so large that it is not impossible that a few cases of this sort might have been described of which I have no knowledge;<sup>2</sup> but even if this were so, I think that I have proved the proclivity of the abductor fibres of the recurrent nerve to become affected sooner than the adductor fibres, or even exclusively, in cases of undoubted central or peripheral injury or disease of the roots or trunks of the pneumogastric, spinal accessory, or recurrent nerves.

The next question—if the fact has been established—would naturally be as to the *cause* of this curious proclivity. To this question it is very difficult, at the present, to give an answer satisfactorily explaining *all* the conditions under which an isolated paralysis of the abductor muscles can take place.

If the theory of the *uniformly central* origin of this paralysis, as supported by Bosworth, were correct, the presumption of the existence of an *independent ganglionic centre for the abductors* (as suggested by Mackenzie, myself, Bosworth, and others) would be sufficient to explain its cause. *Any* degenerative change, or, in a few cases, sudden functional disturbance taking place in the brain, under different influences, if limited to these ganglia, would clearly lead to iso-

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*other hand, quite as strange a predilection for affecting the ADDuctors only, as the "organic" lesions for the ABDuctors!* Although there are a few cases of hysterical paralysis of the *abductors* on record (Fränkel, Guttmann, Biermer, Burow, Schreiber, Mackenzie-Semon), yet the *immense majority* of cases of "hysterical paralysis," hitherto recorded, concern the *adductors* (and tensors) only.

<sup>1</sup> To avoid all possible mistakes, I beg to state distinctly that I speak of such cases only in which isolated paralysis of the *adductors* could be traced to a "*primary*" lesion of the *roots or trunks* of the accessory, pneumogastric, and recurrent nerves. Such cases are not known to me. But I have no doubt that cases have occurred (or could be imagined), in which an originally local affection (such as a carcinoma) affected, in consequence of its anatomical situation, at an early period, the adductor fibres and muscles only, and, implicating in its later stages the entire recurrent nerve, led to paralysis of *all* the laryngeal muscles.

<sup>2</sup> I earnestly hope that this paper will serve in eliciting contributions corroborating or rectifying, as the case may be, my statements, from those who have had and have the opportunity of seeing cases in point.

lated paralysis and atrophic changes of the abductors. Of course there would still remain the question why the centres for the abductors are so often the seat of such degenerative processes, *in preference* to the common centre or to the probably-connected centres of the adductors (if it be supposed that each of those, as well, has a ganglionic centre of its own).

Several answers might be given to this question, contributing to, if not affording, a solution.

In the first place, the very fact just mentioned, viz.: the *mutual coöperation* and probably existing anatomical connection of the adductor centres, offers an explanation why they should be longer and more effectually protected against disease-producing influences, to which the unsupported and isolated centres of the abductors would earlier succumb. (See also Penzoldt, *l. c.*, p. 120.) Even if one or some of these adductor centres were diseased, it would by no means be improbable that the remaining healthy ones would act *vicariously* for them. That this suggestion is not a purely theoretical one, but that the mechanism of adduction of the vocal cords is actually endowed with a sort of *compensatory* tendency, is shown by the fact that, in paralysis of an entire recurrent nerve, with consequent immobility of the affected cord, in the cadaveric position, the contraction of the adductors on the healthy side, in very many cases, is so excessive, when phonation is attempted, that the healthy vocal cord *crosses* the median line to join its diseased fellow.

Another explanation might perhaps be found in the fact that the activity of the abductors, although, I believe, not *entirely* beyond the control of the will, is certainly much more automatic than that of the antagonists, and that, hence, perhaps, its power of resistance against disease-producing causes is less.

Finally, attention is to be drawn to the very remarkable fact, that this proclivity of the *abductor* centres to succumb to central causes of disease is quite *analogous* to the similar proclivity of the *extensor* muscles of the extremities to become sooner affected than the flexors, or even exclusively, in diseases of central origin, *e. g.*, in lead paralysis. (See also Rosenbach, *l. c.*)

But as I have shown that the theory of a *uniformly central* origin of the disease is untenable in the face of the authenticated cases of paralysis and degeneration of the muscles in consequence of disease of, or pressure upon, the nerve-trunks, even the existence of an independent centre would not account for the origin of this latter class of cases.

What, then, is the explanation of these cases?

There would be no difficulty, certainly, in explaining the phonatory position of the vocal cord or cords, in cases of undoubted nerve-trunk lesion, if this phenomenon were limited to a comparatively *short and early* period of the primary disease, in cases of *pressure* on the nerves. Before any pressure *disables* any fibres of a nerve, it acts in the manner of a mechanical *irritation*. Schech's beautiful experiments on animals have proved<sup>1</sup> the following fact:

"If the recurrent nerve or the pneumogastric nerve is irritated, the result is: a position of the vocal cords in the median line (phonatory position) in consequence of the preponderance of the adductor muscles." In other words, we have the same phenomenon as if the adductors alone were irritated.

But this explanation holds good only for the *earliest* stages of a pathological process encroaching upon the nerve-trunks. Why does the *phonatory* position of the vocal cords continue in the later stages? Why do we see during life, or find at the *post-mortem* table, evidence of retrogressive changes in the posterior crico-arytænoid muscles *only*, in cases of *long* duration (Cases 3, 4, 6, 9, 15, 21) and of undoubted *grave* implication of the nerve-trunks (Cases 3, 4, 5, 9, 10, 16, 17, 19, 20, 22)?

Under *all* circumstances, we must, in order to *understand* these cases, keep *one indispensable premise* before our minds, although we may, in the present state of our knowledge, not always be in the position of actually *proving* it, viz.: that in *all* these cases it is *impossible* that the conductivity of *all* fibres of the nerve-trunk should have been destroyed, however complete and long-existing the complication of the

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<sup>1</sup> *L. c.*, p. 33.

nerve-trunk, in the morbid process, seemed to be! Riegel's case of involvement of both recurrent nerves, in dense connective tissue (No. 9 of the retrospect), is an excellent proof that, if the microscopic examination of the compressed nerves is made with sufficient care, it will be found, doubtless in *all* such cases, that a number of normal, well-preserved fibres still exist. And yet in his case the duration of the laryngeal disease was *three years*! It is thus conclusively shown that neither *intensity of the morbid process* nor *long duration* of the disease involve, of necessity, *total destruction* of the nerve-trunk, and we can fairly draw the inverse conclusion that, if we see, during life, isolated paralysis of the abductors, or find them, after death, in a state of atrophy and fatty degeneration, in cases of undoubted affection of the nerve-trunks themselves, the very limitation of the morbid changes to this one set of muscles, proves that the conductivity of the nerve *cannot* have been destroyed *in its entirety*. (See Cases 4 and 17 of the retrospect.)

Again, if this explanation be correct, we find ourselves confronted by the same question which we considered after the explanation of the cases of *central* origin, viz.: What is the *cause* of this curious proclivity of the *abductor filaments* to become affected sooner than the adductor fibres, or even exclusively, in cases of affection of the whole nerve-trunk?

Several hypotheses might be made and have been made to explain this peculiar proclivity, viz.:

1. That the anatomical distribution of the fibres of the recurrent nerve may be a *concentrical* one, and that the abductor fibres may be situated in the *periphery* of the nerve, *i. e.*, *most* exposed to all external injuries.

2. That there may be a specific vulnerability of the abductor filaments, or—what would amount *practically* to the same thing—that even in cases of partial disablement of the *adductor* filaments, the remaining healthy adductor fibres might conduct *all* the nerve-force emanating from the adductor centres, to the adductor muscles.

3. That possibly the adductors receive an increment of nerve-force from the superior laryngeal nerve.

However, all these hypotheses are open to certain ob-

jections, and none of them seems to me to offer a really satisfactory and plausible explanation. But at the same time I do not believe that an *explanation* is the thing we want at present.

In the face of the comparative novelty of the subject and of all the difficulties connected with this question, I would rather believe that the time has not yet come when we can venture to give an *explanation*, but that, before all, by numerous further contributions, the *fact* should receive further corroborative evidence, that: *There is a proclivity of the ABductor fibres of the recurrent nerve to succumb to pathological influences affecting the roots and trunks of the motor nerves of the larynx.*

Quite apart from the *great intrinsic anatomical and physiological* interest of the question, its affirmative reply would entitle us to lay down the following practical rule:

Immobility of one or of both the vocal cords in the *phonatory* position—if not occasioned by mechanical impairments, or myopathic affection—invites to a consideration of *all* the possibilities which may produce paralysis of the *entire* recurrent nerve; immobility in the position of *deep inspiration*—if not occasioned by mechanical impairments, or myopathic affection—is much more likely to be due to either a *functional* or a *local* neurosis, *i. e.*, an affection produced by *local* disease of the *adductor twigs* of the recurrent nerve.

CASE OF BONY GROWTH PROJECTING INTO THE  
POSTERIOR TRIANGLE OF THE LEFT SIDE OF  
THE NECK, CAUSING DISPLACEMENT OF THE  
SUBCLAVIAN ARTERY AND SOME LARYNGEAL  
DISTURBANCE.

By ROBSON ROOSE, M. D.,

BRIGHTON, ENGLAND.

Miss M., æt. 36, is of slight frame, short stature, and marked nervous temperament. She presents a prematurely aged appearance, especially as regards the hair and skin, and she complains of spasm in the throat, which, though not amounting to true laryngismus, appears to be of that nature. She also suffers from an irritable action of the heart at times, and from "rheumatic" pains, with prostration of strength and loss of flesh. For many years she has been much worried by family affairs.

On careful examination, a process of bone was perceived projecting in the posterior triangle of the left side of the neck, originating, apparently, as an outgrowth from the sixth or seventh cervical vertebra. The subclavian artery could be felt to be displaced upward by this exostosis. Sphygmographic tracings of the radial pulse on each side show that whilst they are alike in character, the right artery has a larger stream than the left, indicating that there is not only displacement of the subclavian artery, but also slight narrowing of its calibre from pressure. On laryngoscopic examination, I found the larynx to be healthy, except as regards a slight congestion of the ary-epiglottic folds. This observation was subsequently confirmed by Dr. Morell Mackenzie.

From the family history it was ascertained that tubercular,

rheumatic, and gouty tendencies had all shown themselves on one or other side. Her mother died at 50 of epithelial cancer of the pharynx, but the cause of her father's death is unknown. Miss M. experienced no serious illness in childhood, but at the age of five or six she had an accident, having fallen out of her crib; soon after this the mother's attention was drawn to something wrong with her child's neck. Mr. Stormont, who was the medical attendant of the family at that time, recently informed me that he was asked to examine the case, and that upon inspection he found, deep behind the left clavicle, a small bony mass, which seemed to spring from the inner edge of the anterior part of the left first rib; he concluded, from the history of the fall, that some injury to the parts had caused a small exostosis, and strongly advised the parents to take the opinion of the late Mr. Hilton, who entirely endorsed Mr. Stormont's view of the case, and further stated that "he would not be surprised if at some future time the growth should give trouble by encroaching on important vessels and nerves." At frequent intervals there was undoubted evidence of discomfort, and often of pain, which was relieved by soothing local applications. A slight increase in the growth of the bony mass gradually took place. In consequence of frequent complaint of pain and uneasiness in the neck, together with difficulty of swallowing and a feeling of spasm in the throat, Miss M., when she was about fifteen years old, was taken to Sir James Paget. Differing entirely from Hilton, he regarded the growth as an abnormal prolongation forward of the left transverse process of the last cervical vertebra, overlapping the left first rib on its inner side, and reaching forward behind the clavicle. He deprecated interference, expressing his belief that the growth would probably cease to trouble when the patient attained maturity of growth. Sir James Simpson afterward saw the case, and confirmed Paget's view.

Since then the bony tumor has been the seat of uneasiness whenever any mental or bodily disturbance has affected the patient, and of late it seems to have pressed itself on her notice by pain and spasm of the throat.

Dr. Buzzard, who recently saw Miss M. with me, discovered in one of her feet a small exostosis, such as is present in *arthritis deformans*, and seeing that her family history includes more than one case of rheumatic gout, he considered that the bony outgrowth in the posterior triangle is of an arthritic origin, the disease probably having commenced in the periosteum.

After frequent careful examinations, I have, however, come to the conclusion that the case is one of outgrowth from the anterior transverse process of the last cervical vertebra, and united on its outer side for some distance with the first rib. It need scarcely be remarked that operation is out of the question in this case, and all that remains is to support the general health by tonics, cod liver oil, and a highly nutritious and non-stimulating diet, and to soothe the irritable internal lining of the throat by the use of local anodynes. I have thought this case sufficiently interesting to place on record, not only on account of its rarity, but because of the difficulty of determining its nature with absolute certainty. Knox\* reported several somewhat similar cases many years ago. Humphrey,† who has also described an excellent example of this anomalous condition, accounts for its occurrence by the fact that the seventh cervical vertebra holds an intermediate position between the cervical and the dorsal vertebræ. It appears that the anterior transverse process of this vertebra is developed from a separate nucleus, which corresponds with the head and neck of a rib in the dorsal region. In other words, though distinctly a development from the vertebra, the bony process may be regarded as a cervical rib.

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\* *Lond. Med. Gaz.*, vol. 33.

† "Treatise on the Human Skeleton," p. 126, pl. vi. Cambridge, 1858, *et seq.*

DILATATION OF THE LARYNX AND TRACHEA IN  
SOME FORMS OF STENOSIS, WITH A CASE OF  
MEMBRANOUS STRICTURE OF THE TRACHEA.

By J. D. ARNOLD, M.D.,

BALTIMORE, MD.

THERE is, perhaps, in the whole domain of laryngology no therapeutical procedure more worthy of careful trial than the systematic dilatation of the larynx or trachea in certain forms of stenosis of these organs; and the value of any measure to this end surely stands in direct ratio to the vital importance of the functions whose integrity is menaced by their occlusion. The power to recognize and to examine the pathological changes which give rise to strictures of the air-channel, is certainly not the smallest boon that the laryngoscope has conferred upon medicine, and with it has also come the possibility of the instrumentation of this passage under the guidance of the eye.

Although the introduction of catheters into the larynx for the purpose of removing pseudo-membranes in croup had already been practised by Munro, Portal, and Depaul, and for the conveyance of air and medicaments by Loiseau, Betz, Curry, Goodwin, and others, and although Trousseau, Desault, and Weinsbacher had, even before the days of laryngoscopy, suggested the feasibility of using bougies in laryngeal stricture, Schroetter of Vienna was undoubtedly the first to practise gradual, systematic dilatation, in stenosis of the larynx and trachea, through the natural passages and with specially-designed tubes. Schroetter states\* that it

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\* Jahresbericht der Klinik für Laryngoskopie a. d. Wiener Univer., 1871.

was whilst engaged in perfecting his method of dilating the glottis (after laryngotomy) with the view of permanently removing the canula, the possibility first occurred to him of overcoming strictures of the larynx without recourse to section. Such a method has, of course, not only the great advantage that it obviates the necessity of laryngotomy, an operation which is in itself accompanied with a certain danger to life (consequent pneumonia, emphysema, etc.), but it also allows treatment of the stenosis at an early stage when the occluding tissues must certainly be most capable of dilatation. Moreover, even the best results which Schroetter obtained from his ingenious plan of dilating with tin bougies after laryngotomy, show that although he was able in every instance to enlarge the glottis to almost normal limits, only in a very small percentum of cases was the real object of the procedure attained, that is, permanent removal of the canula.

It is quite probable that the condition first described by Gerhardt, and called by him "*Chorditis inferior hypertrophica*," is a more frequent cause of stenosis of the larynx than even syphilis.\* Besides, Stoerk has called attention to a disease of the air passages—which he has met very frequently in his hospital practice, and which, he states, appears to be almost epidemic amongst the inhabitants of Galicia—that produces in the lower portion of the larynx a condition exactly similar to the *chorditis hypertrophica* of Gerhardt. This he describes as a process which commences in the nares as a chronic *ozæna*, and slowly extends downward into the pharynx and larynx, presenting in these structures precisely the same *cyclus* of morbid phenomena as above: *hyperæmia* of the mucous membrane, infiltration of the submucosa, ulceration with fœtid, purulent discharge, and, finally, cicatrization. (Stoerk has applied the term "*Chronic blennorrhœa*" to this affection.) Especially pronounced are these changes upon the anterior surface of the arytenoids, the ventricular bands, and the inferior surface

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\* During a four months' course of attendance at the Vienna Throat Clinic, I have seen 13 cases of cicatricial stenosis of the larynx. Of these, 3 were of syphilitic, 1 of traumatic origin, and the remaining 9 were due to the above-mentioned pathological process, or were, at least, so classified.

of the true vocal cords. Small and circumscribed ulcerations quickly make their appearance on many portions of the diseased structures, but, as if by preference for these localities, they are broader, deeper, and more confluent upon the anterior face of the arytenoids and the inferior surface of the true cords. In the larger number of cases when the process has reached this point, it seems to have exhausted itself, and is not often continued down into the trachea: possibly because the mucous covering is so closely adherent to the cricoid cartilage that in this region it resists infiltration, and thus offers a bar to the progress of the disease. I have seen one case however, where the blennorrhœa extended deep into the trachea and in which the resulting strictural cicatrices could be distinctly seen in the immediate neighborhood of the bifurcation. Usually, the deepest portion of the larynx, just below the vocal cords, seems to bear the brunt of the pathological change, and as yet no course of treatment proposed seems able to check its passage from the nares to the trachea. After it has attained this point a period of spontaneous repair generally sets in, the structures that were first attacked healing first, and it happens, not infrequently, that the ozæna and purulent pharyngitis have disappeared before the blennorrhœa has completed its course in the larynx.

The atrophy of the turbinated bones (nearly always the inferior) in the nares, and the confluent cicatrices in the pharynx, which mark the passage of the ulcerative process through these organs, can evidently entail but slight future inconvenience upon the patient. Not so, however, with the cicatrices which form in the larynx, and especially those on the site of the ulcers on the inferior surface of and below the true cords. These present the appearance of a firm, white, glistening membrane, often completely encircling the lower larynx, and reducing to a greater or less extent the size of the glottis. It often happens also that the anterior edges of the cords become firmly agglutinated. In one case I have seen,—a woman 23 years old,—the rima glottidis was thus reduced by fully one-third of its whole length. Of course, the tendency of a cicatricial membrane of this

character is to continue to undergo progressive contraction, and thus gradually to reduce the calibre of the larynx. Aphonia to a greater or less degree necessarily supervenes, and very often the more distressing symptoms of progressive dyspnœa develop. In exceptionally severe cases cicatricial adhesion of the ventricular bands and of the arytenoids serves to increase the grade of the stenosis.

Syphilis, although beyond doubt more frequently the cause of cicatricial formation in the larynx, is not so often the source of stenosis of that organ as the process mentioned above. This seeming inconsistency is of easy explanation when it is remembered that the structures which are most frequently the seat of venereal ulceration are just those whose cicatrization least affects the dimensions of the air passage; namely, the epiglottis, the ary-epiglottic folds, the upper surface of the arytenoid, and the ventricular bands. The true vocal cords seem to enjoy comparative immunity even in cases of most extensive syphilitic ravage in the larynx. Tuerck\* mentions two cases of high-graded stenosis from "chronic tumescence" (*anschwellung*) of the true vocal cords. In neither case could any history of syphilis be made out, but one of them improved rapidly under a course of mercurial inunction, whilst in the other tracheotomy was resorted to because of the alarming dyspnœa that rapidly developed. In his report of the latter case, Tuerck makes no mention of a rhinoscopic examination; but the drawing which he gives of the larynx looks so much like the typical stricture of chronic blennorrhœa that probably the case belongs under this head.

It is not unusual, however, for stricture of the larynx to ensue upon the healing of specific ulceration, and as Cohent† observes, such pathological changes "often eventuate in permanent constriction of the laryngeal orifice, and sometimes, even though the glottis is not directly implicated, necessitate the operation of tracheotomy, with almost always the permanent use of the canula."

Should the false cords become the seat of the ulcerative

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\* "*Klinik der Krankheiten des Kehlkopfes und der Luftröhre*," p. 205.

† "*Diseases of the Throat and Nasal Passages*," 2d ed., 1879, p. 124.

process, the loose arrangement of the submucosa in these structures favors chronic infiltration and hypertrophy, that may give rise to a considerable degree of stenosis. I have seen several such cases in which, although the infiltration disappeared after constitutional treatment, the extreme thickening remained and occluded the larynx sufficiently to produce severe dyspnœa. The ary-epiglottic folds are often implicated simultaneously with the ventricular bands, and by their hypertrophy infringe upon the already constricted air passage; or they may become the seat of ulceration, and in their consequent cicatrization draw the epiglottis firmly down upon the arytenoids.

Dr. John N. Mackenzie\* calls attention to the fact that in congenital syphilis a form of interstitial laryngeal inflammation likewise occurs, in which a gradual deposit of dense fibrous material takes place within the tissues of the larynx, and leads to contraction of its lumen.

Perichondritis, from whatever cause, affecting the arytenoids, the thyroid or the cricoid cartilages, singly or together, is not rarely the origin of extreme stenosis of the larynx, and the bursting of a perichondrial abscess in the immediate vicinity of the attachments of the cords is nearly always followed either by their agglutination or by the formation of a membranous stricture that often leads on to aphonia and dyspnœa.

Surely it is beyond doubt that stenoses of the larynx, resembling in origin and character some of the conditions I have so briefly mentioned, are of comparatively frequent occurrence, and yet although some time has elapsed since Schroetter† published the results in a large group of cases of his method of dilatation, as far as I am able to ascertain, only a few isolated instances of its trial have been reported by other laryngoscopists. It is not easy to explain why throat-specialists do not practise more frequently a procedure that has been demonstrated so practicable, and pregnant with good results. In the work cited above, the treatment with dilators is detailed in eight cases where

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\* "Congenital Syphilis," *American Jour. for Med. Sciences*, Oct., 1880.

† "Beitrag zur Behandlung der Larynx Stenosen," Wien, 1876.

already urgent and increasing dyspnœa was present at the commencement of treatment, and in every case was the stenosis overcome without recourse to laryngotomy. To this end was employed a graduated series of hard rubber tubes from 23 to 25 *cm.* long, with about the same curvature as the ordinary laryngeal brush or sound. The laryngeal portion of the tubes has the shape of the glottis; that is, they are somewhat triangular with rounded edges, and supplied with an opening at the end and two oval fenestra on the sides, like those on urethral catheters, through which the patient may breathe, and cough out the secretions. The series of tubes which Schroetter now uses are 12 in number, and increase in thickness according to the following scale. No. I is 8 *mm.* thick from before backward, and 6 *mm.* transversely. No. XII is 20 *mm.* from before backward, and 16 *mm.* across; so that the tubes increase in thickness with each number, 1 *mm.* anteroposteriorly, and not quite 1 *mm.* transversely. Each tube diminishes slightly in both diameters at its tip, and is thus rendered somewhat wedged in form.

In stenosis of a high grade, and where the lumen of the larynx will not permit the passage of tube No. I, the dilatation is commenced with the ordinary English flexible catheters. It is perhaps better in all cases to use such catheters until the patient becomes somewhat accustomed to the introduction of an instrument into the larynx, because flexible instruments are borne much better by this organ than those constructed of an unyielding material. Ordinarily the larynx reacts very strongly upon the first introductions of catheters, but it quickly learns to tolerate them, and a powerful element to this end is the good-will of the patient, who should be made to understand that the measure is one which will soon relieve him of his distressing symptoms. The tube, which is always best introduced under the guidance of the mirror, is grasped firmly by the middle and index fingers above, and thumb below, and passed so deep into the larynx as to press with its tip upon the true cords. Here the operator rests until the cords open during inspiration when, with considerable force, if

necessary, the tube is pushed through the stenosis into the trachea to such a depth that all its fenestra shall be beyond the constricted portion. Except in cases where dyspnœa is a very urgent symptom, the mere passage of the stricture is all that should be attempted at the first trial; the period of retention to be prolonged as the parts become more tolerant of the instrument.

As far as the operator is concerned, no one who is accustomed to the use of the simplest instruments in the larynx, such, for instance, as the brush, sponge, or insufflator, can find any difficulty in this manœuvre. The thick, strongly-depressed epiglottis, which is so often a troublesome obstacle to the proper use of other instruments, offers no obstruction to the passage of the dilator, since the catheter or hard rubber tube is in itself the best possible elevator for the epiglottis.

Perhaps there is no better way of illustrating the manner in which dilatation is practised at the Vienna clinic, than by the relation of the following case from my own notes which, with the permission of Prof. Schroetter, I have corrected by the case-book of his ward. I would mention that I had occasion to examine, laryngoscopically, this patient every day from the time of his admission until his discharge from the hospital, cured.

H. L. was admitted on Oct. 11, 1880. Patient is a tall, muscular man, 28 years old; face pale and wears an anxious expression; voice raw, husky and broken; breathing quick and labored, and can be heard from a considerable distance. Complains that he has been quite hoarse and short-winded for more than a year, but both these symptoms have become more pronounced and distressing during the last two months. Whilst being questioned, he was seized with a fit of spasmodic coughing which lasted several minutes and during which suffocation appeared imminent; states that he is subject to such alarming attacks lately, and had come to the clinic upon the advice of his physician to determine the propriety of tracheotomy. Patient denies having had syphilis, and no cicatrices could be found either upon the genitals or any other region of the body. Laryngoscopic examination presented the following appearances: Epiglottis folded somewhat backward,

but otherwise entirely normal. During a deep inspiration the lower portion of the larynx (beneath the true cords) was seen to be completely encircled by a grayish-white and tolerably thick membrane, which reduced its lumen to about the size of a small goose quill. The superior face of the cords as well as the remaining portions of the larynx appeared perfectly normal. The cords close well in phonation, and the excursions of the arytenoids are free and full. A number 7 catheter (English) was, with some difficulty, introduced, and allowed to remain a few minutes.

Oct. 12th.—Patient passed a very restless night, unable to sleep even in the sitting position, because of frequent fits of coughing, due, no doubt, to the collection of thick mucus about the stricture. Appearance of the larynx, same as day before. Examination of the posterior nares, by aid of the mirror, discovered atrophy of both inferior turbinated bones and other evidences of an old ozæna. This, together with the condition of the larynx, indicates blennorrhœa as the probable cause of the stenosis. Catheter No. 7 was again introduced, allowed to remain a short time, and, immediately upon its removal, No. 8 was passed, and retained for full ten minutes. No. 8 again passed upon afternoon and evening of same day.

Oct. 13.—Patient states that he already breathes more freely, and can lift mucus from his throat with less effort. Catheter No. 8 passed, and retained five minutes. Catheter No. 10 passed with some little trouble, and retained five minutes. On evening of same day No. 10 retained fifteen minutes.

Oct. 16th.—Catheter No. 12 passed easily. Catheters now introduced three times each day.

Oct. 20th.—Hard rubber tube No. I. Patient breathes with decidedly more ease, and expresses himself as eager to have dilatation proceed more rapidly.

Oct. 28th.—Hard rubber tube No. III. Patient breathes quite freely, and even after walking quickly up and down the ward his respiration is scarcely audible, and unattended by that raw, rasping sound peculiar to laryngeal and tracheal stricture, and which was so marked at the time of his admission. Voice somewhat improved. Tube now retained for half an hour at each introduction.

Nov. 4th.—Tube No. v.

Nov. 11th.—Tube No. vi.

Nov. 20th.—Tube No. vii.

Dec. 13th.—Tube No. x.

At this time the patient again breathed with perfect ease, and the voice, although a little rough, was distinct and loud. Laryngoscopic examination showed the membranous stricture to have quite shrunk together, and in the passive position of the cords nothing could be seen of it except a thin, narrow, white band just under the anterior commissure. The patient was now taught to introduce the tubes himself, which he learned to do quite readily in a few days. On December 19th he was dismissed, with the instruction to pass tube No. 9 twice a day, and to retain it fifteen minutes each time.

As an objection to the retention of instruments in the larynx, the statement has been made that so great a degree of salivation is occasioned thereby as often to cause loosening of the teeth. Schroetter, who certainly has had most experience in this procedure, declares that he has never observed such a degree of salivation, nor has he ever been deterred in the use of the dilator by this symptom. It is customary, during the retention of the tube, to allow the patient to sit with body and head bent slightly forward, which position favors the flow of the spittle out of the mouth into a basin or towel provided for that purpose.

It sometimes happens that the cicatricial formation, which constitutes the stricture, is so broad in its attachment, and of such strength and firmness that it yields very slowly to stretching by the unaided catheter. In such cases the dilatation is considerably hastened by the use of the knife or galvano-cautery. Two, three, or, if necessary, more nicks should be made in the stricture, the edges of the wounds touched with solid nitrate of silver, and the tube immediately thereafter introduced and retained for at least half an hour. This operation, which is in most cases easily practicable and unattended by pain, may be repeated as often as required. To the same end the galvano-cautery may often be more efficacious than the knife.

Still another source of difficulty in dilatation are small papillary hyperplasie, which not infrequently sprout out at the margins of the stricture when the cicatrices are of syphilitic origin. Voltolini\* and others have advised the

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\* Anwendung der Galvanokausik im Innern des Kehlkopfes und Schlundkopfes.

destruction of such growths by the galvano-cautery. I have seen instruments, similar in design to Mackenzie's three-bladed dilator, employed in several cases to hasten dilatation by the active pressure they exert upon the stricture, but without any benefit. Besides, such instruments are quite difficult to retain in place, and, being of metal, are very badly borne by the larynx. Cohen states that he has used large-sized polyp forceps for the same purpose.

Diminished calibre of the trachea is fortunately a rarer occurrence than stenosis of other portions of the air channel, and, in the great majority of cases, is due to compression by growths, aneurisms, and enlarged glands in the contiguous parts. Still, stricture of this organ sometimes occurs from disease of its own proper walls and mucous investment; and by far the most frequent cause of stenoses of this kind is syphilitic cicatrization. Although, for very obvious reasons, the dilatation of tracheal stricture is attended with peculiar difficulties, it is always practicable when the stricture is of a membranous character, and when it is situated in the upper two-thirds of the passage. Here, as in the larynx, Schroetter uses the elastic catheters and hard rubber tubes, but with a double curvature, so that they present the appearance of a letter S that has been drawn out.

The case with which I shall conclude very strikingly illustrates the practicability and efficacy of systematic dilatation in a certain class of tracheal stenoses, and is, I think, unique as to treatment, in the history of laryngoscopy.

F. D., a merchant, has suffered since October, 1879, from a harassing cough, sometimes accompanied by bloody sputa, and, since May of the same year, from difficulty in breathing. In July, examination with the mirror discovered an ulcer upon the right wall of the trachea. Patient acknowledged venereal disease, and was put upon mercury by inunction. At the end of August he again presented himself, this time with alarming dyspnœa. Laryngoscopic examination now showed, upon the site of the former ulcer, a broad cicatricial membrane, so nearly occluding the whole lumen of the trachea that only a very small passage was left near the left wall. The introduction of catheters was immedi-

ately begun. This procedure was attended with some difficulty, and on several days (during first two weeks of treatment) as many as four and five trials had to be made before the smallest catheters could be passed. This was due, not only to the smallness of the opening, but, in great measure, to its position, which, being so far removed from the centre of the trachea, was not easy to reach with the point of a flexible instrument. By the end of September, however, catheter No. 8 could be introduced, and on October 20th No. 12. The patient now breathed quite comfortably, and could even undertake a few minutes' rapid walk, without rendering his respiration audible.\*

Nov. 11th.—Catheter No. 14.

Nov. 14th.—Catheter No. 15.

Nov. 20th.—The membrane was cauterized with solid nitrate of silver; again, on Nov. 23d, catheters are now introduced three times a day.

Nov. 25th.—Catheter No. 16.

Nov. 27th and 30th.—Cauterizations with caustic potash. There was now to be seen a second small opening, just in the centre of the stricture, and the introduction of the catheter on Nov. 30th tore the two openings into one.

Dec. 2d.—Opening appeared much larger than even yesterday; loose, flabby edges. Hard rubber tube No. 11.

Dec. 4th.—Cauterization with caustic potash. Tube No. 111. Tube now passed three times every day.

Dec. 6th.—Tube No. iv. Patient began to try to pass tube himself.

Dec. 12th.—Opening appeared large enough to admit small finger. Tube No. v.

Dec. 15th.—Patient could introduce tube quite easily. Tube No. vi.

Dec. 16th.—The patient declared himself satisfied with his condition, and anxious to be discharged from hospital. Dismissed, with the caution to introduce tube No. vi twice a day, and to return to the clinic whenever the slightest difficulty arose in its passage. Has not reported up to date of writing.

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\* This case was, at this period of its treatment, reported by Prof. Schroetter in the *Monatsschrift für Ohrenheilkunde*, No. 12, 1880. With his permission I give the continuance of its history.

## THREE CASES OF LUPUS OF THE PHARYNX AND LARYNX.\*

By F. I. KNIGHT, M. D.,

BOSTON.

CASE I.—*Lupus of the pharynx and larynx following lupus of the face.*

Miss X. stated that she was 33 years old, and was well till the age of 13, when she received a blow on the nose from the elbow of her sister, which caused her to bleed nearly to "death." The nose swelled, and afterward became red and angry-looking, and was sore to the touch, and continued to bleed at times. During 1861 the eyes were affected, so that she was compelled to give up going to school. She tried to resume study the next year, but was unable to use her eyes. Then a bunch about as large as a small pea came on the end of the nose. This was cut off by her father, and ulceration began on the right side of the nose at the edge of cut. She continued to have nose-bleed. In 1863 the upper lip became swollen and ulcerated, and when she laughed the blood would burst from it. She continued to grow worse, and in 1865 the throat became ulcerated; she lost her voice, and was short of breath. She was much reduced in strength. She also at this time had cough. At the end of the following year (1866) she had regained her strength and voice. In May, 1867, ulceration commenced on the right cheek, and at some time during the next three years extended to the left cheek also. In 1871 she lost her voice again, and did not speak aloud for a year. In 1874 the tongue became ulcerated at its base, and a bunch appeared on the right eyeball over pupil, which was removed by the doctor. The face was a terrible sight, and "hard like a stone." In 1875 she became very weak. In January, 1880, came

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\* Read before the American Laryngological Association, Session 1881.

under the care of Dr. J. C. White, at the Massachusetts General Hospital, and her condition has much improved since. The face feels and looks much better. She has taken cod liver oil internally, and constantly used various lotions for the face. I saw her in December, 1880, and again in April of this year. There is some cicatricial contraction about the mouth and nostrils, the latter being considerably diminished in size. The skin has become comparatively smooth, that on the nose showing a white cicatrix. There is a perforation in the nasal septum. The cheeks, nose, and lips are covered with red points of the size of a pin's head, some of them raised. The whole skin in this region is red and shiny. There is an ulcer on the lower lip and one on the upper gums, which have existed for seven or eight years. The teeth have been all extracted.

Examination of the throat shows uvula absent, the back of pharynx covered by cicatricial tissue, some small cicatrices in vault of pharynx, just above septum, also in left glosso-epiglottic sinus, and extreme pallor of mucous membrane of pharynx and epiglottis. The epiglottis looks rigid, and shows considerable loss of substance on the right side. There is much irregular hypertrophy and swelling of the mucous membrane of the interior of the larynx, more marked on the left. The left ary-epiglottic fold is thickened, and above the left ventricular band is situated a swelling of the size of a large bean. The mucous membrane of the posterior wall is much thickened. The general appearance of the interior of the larynx is rough, thick, and granular. The left cord cannot be seen on account of the swelling above. The right cord is very thick, granular, grayish in color. Above the anterior half of this cord, as if coming from the ventricle, is a mass of thickened tissue, red in color. The right ventricular band is very pale.

In regard to the family history of this patient, she states that her father and mother are alive and well ; also two brothers and five sisters, while one sister has a disease of the nose similar to her own.

*CASE 2.—Lupus of the pharynx and larynx preceding lupus of the face.*

Mrs. Y., 36 years of age, gave the following history :

Father died of old age ; mother living and well. Two brothers died in infancy ; two living and well. One sister well ; one sister insane.

Patient had scarlet fever when eight years of age, and her throat has been sensitive ever since. Serious trouble began nine or ten years ago with ulceration in the throat, apparently in the upper part, as, at this time, in attempting to swallow liquids, they passed through the nose. Ulceration began on the skin of nose about eight years ago, after the ulceration of the throat. Two years ago her voice became affected. It is now very husky, and produced with great effort.

Examination shows her nose sunken in ; cheeks and nose covered by hard, white cicatricial tissue ; some crusts on forehead and sides of cheeks ; loss of substance in upper lip. Examination of throat shows loss of substance of soft, and cleft in hard palate. Upper pharynx covered with dried muco-purulent matter, lower pharynx with cicatricial tissue. Broad cicatricial bands run from tongue to lateral walls of pharynx ; also cicatricial bands from sides of epiglottis to pharynx. There is loss of substance at tip of epiglottis, the remainder of which is thick and granular-looking. There is also a rough, granular appearance of the mucous membrane of the larynx above the vocal cords. Ventricular bands thick, especially the right. Vocal cords dirty,—reddish-white, covered in, anteriorly, on attempted phonation, by swollen ventricular bands. Mucous membrane of posterior wall much thickened ; that of the ary-epiglottic folds somewhat so.

This patient has no history or signs of syphilis (unless the above be considered such). She has never had children or miscarriages. She has had no symptoms of pulmonary disease.

CASE 3.—*Lupus (?) of the pharynx and larynx without manifestation elsewhere.*

Miss Z., 17 years old, previously healthy, began to be hoarse when 12 years of age. I saw her first in 1878, she being then fourteen years old. There was ulceration of the epiglottis, and a catarrhal condition below. No other physical signs in throat, lungs, or elsewhere. She improved on cod liver oil and iodide of potash.

I saw her again in April of this year. She stated that her voice had been growing worse for a year or two, and that she had spoken mostly in a whisper for the past six months.

On examination I found the posterior palatine folds much thickened, and of a dark pink color. The uvula is absent. The mucous membrane of the posterior wall of pharynx is very pale and

thickened. The base of the tongue and glosso-epiglottic sinuses pale, with some cicatricial appearance. The epiglottis is pale, thick, with considerable loss of substance at its tip, causing a median notch ; thickening of ary-epiglottic folds ; much swelling of posterior wall. Ventricular bands and cords rough and swollen, granular-looking, the cords being of a dirty-reddish hue. Patient feels perfectly well, and weighs more than ever in her life. She looks pale, but otherwise plump and well. Sounds derivable from percussion and auscultation of chest perfectly normal.

In family history, I obtained from the father the following facts : He himself (the father) had suffered from a phimosis many years before he could get courage enough to consult any one about it. During this time he had gonorrhea, and a suppurating bubo, but never any signs of syphilis. Years after the birth of his children he was operated on for the phimosis by Dr. J. C. Warren, with great relief, but there was always a little spot on the penis, which did not heal, and on this spot afterward developed what Dr. Warren considered an epithelioma, and excised. This was a year or more ago, and there has been no recurrence. The mother is well. A younger sister was well till six years old, and then developed epilepsy.

These cases are presented wholly with reference to their diagnostic relations.

The first one developed in the course of an ordinary lupus of the face, and presents appearances such as have been ordinarily observed in such cases, especially the irregular hypertrophy of tissue in the larynx. The granular appearance, dwelt on by Dr. Lefferts in the *American Journal*, April, 1878, was well marked in this case. The pallor of the epiglottic region was very striking, and a sign to which I have not seen allusion before. The epiglottis looked like dough or putty.

The second case is particularly interesting, as exhibiting the development of lupus first in the throat, and afterward on the face. I think this has not been observed before. This woman has been seen from time to time for years by different dermatologists, who have had no doubt as to the nature of the disease. No one, as far as I know, has considered it syphilitic. Among others, Prof. J. C. White has

presented her at his clinic as a case of genuine lupus, Dr. Tilden has also seen her this spring, and pronounced the disease of the skin lupus.

The case was of so much interest to me that I thought it would be satisfactory to invite my friend, Dr. F. B. Greenough, clinical instructor in venereal diseases, and one thoroughly familiar with other diseases of the skin, to see the woman, and his letter is worth reading here, in connection with the case:

MY DEAR KNIGHT:

I saw that case yesterday, and am much obliged to you for the opportunity.

There can be no possible doubt but that the cutaneous lesion is lupus. I must confess that had I seen the palate and pharynx, and nothing else, and had no history, I should have decidedly said that it was syphilitic. There does not, however, seem to be any evidence of any other manifestations that could be regarded as such, and I should say that it would be absolutely impossible to have syphilis produce such ravages in the mouth and throat without also having some ulcerative affection of the skin somewhere, as would be shown by scars on the trunk, arms, or legs, of which she has no sign. In a case of hereditary syphilis, perhaps, we might get the gummy formation in the palate, resulting in caries, without the same cutaneous symptoms, but her history most emphatically excludes hereditary specific disease, as it was not until adult life that the trouble began. Whether, however, the necrosis of the hard palate can be attributed to lupus, I am by no means inclined to admit. I should be rather inclined to consider the lupus and the necrosis as results of a common cause, *i. e.*, what we call, in a loose and general way, the scrofulous diathesis. I know that scrofula is a very unsatisfactory and indefinite term, but still all surgeons admit a scrofulous necrosis or caries, and why that should not affect the hard palate as well as the tibia or femur, I do not know. But I do not see how lupus—which, as we understand it, is, practically speaking, a new formation of the cutis (or mucous membrane) that has the tendency to break down and ulcerate—can affect the bones. Histologically, I suppose the lupus tubercle, and the syphilitic gummata, are about the same thing; but (as far as we know clinically),

whereas the latter can be generated from any connective tissue, the former always has for its matrix, or starting-point, the rete Malpighi.

Truly yours,

F. B. GREENOUGH.

10 CHARLES STREET

*May 6th,*

In the third case we have loss of substance and thickening going on in the larynx of a girl for four years, while she retains her usual general health, and has made the usual gain in weight at this period of life.

When I first saw her, I expected that the disease would prove tubercular, and that I should soon find signs in the chest; but four years have passed, and she has no signs or symptoms of pulmonary disease.

Congenital syphilis might be thought of, but I find no other evidence in the patient, and no proof of constitutional affection in the father or mother.

The development of what was considered epithelioma on the penis of the father gives an opportunity to throw another element of discord into the consideration of this case; but the appearance of the larynx, the age of the patient, and the long history (four years) will, I think, prevent any one from seriously considering this a case of epithelioma of the larynx.

Therefore, it seems fair to put this case down in the same class as the second, a case in which we may have the same ulcerations appear secondarily on the face. Some may think it better to call this affection of the throat a scrofulous inflammation and ulceration, but that hardly alters our position, for the French, as is well known, put lupus down as a "scrofulide." All of these cases were marked, as far as the appearances in the larynx are concerned, by loss of substance, irregular hypertrophy, causing a peculiar granular appearance, and two of them by decided pallor of the epiglottis and adjacent regions.

## LUPUS OF THE LARYNX AND PHARYNX.\*

By MORRIS J. ASCH, M. D.,

NEW YORK.

Nora H., æt. 18, came to me in February, 1879, complaining of sore throat and hoarseness. For four years she had suffered with it during the winters. During the past winter she had been much worse, deglutition becoming difficult, fluids passing out through the nose on her attempting to swallow them. There was a pricking sensation in the parts, and an ulceration of the soft palate, which her family physician, from its intractable nature, deemed to be an unusual form of disease, and referred her to me.

On examination the following condition presented itself: The uvula was destroyed. The free border of the velum and the posterior pillars were ulcerated. The anterior pillar of the right side, the right tonsil, and the roof of the mouth were thickened and covered with small fleshy tubercles and nodular masses. The anterior pillar of the left side was thickened, while the whole diseased surface presented a deeper tint than normal. On the posterior wall of the pharynx was a large radiated cicatrix, of the origin of which the patient could give no history. The patient is dysphonic, and the hearing distance is considerably diminished. Examination with the laryngoscope shows the epiglottis thickened, with ulceration on its left side, and with its cushion much infiltrated. The ary-epiglottic folds and the ventricular bands are covered with small tubercles, and thickened so as to prevent any view of the vocal cords. There is also a large papillated mass at the base of the tongue on the right side. The rhinoscope shows the mucous membrane of the vault of the pharynx to be thickened. The lesion gives the patient very little annoyance except in deglutition, when pain is caused by the taking of any

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\* Read before the American Laryngological Association, Session 1881.

stimulating substance into the mouth, and fluids regurgitate through the nose. Her chief annoyance arises from her hoarseness, which has caused the loss of her singing voice which she desires to regain. Examination of the surface of the body discovers no cutaneous lesion, eruption, or enlarged glands, and the closest inquiry fails to reveal any antecedent syphilitic history, inherited or otherwise. The patient is a tall slender blonde of the type with which we are accustomed to associate strumous disease.

After a close examination the case was decided to be one of primary lupus of the throat, but it was deemed best, in order to put the question of syphilis beyond doubt, to place the patient upon the mixed treatment. This was continued for more than two weeks, at the end of which time, there being no improvement, it was discontinued. A solution of nitrate of silver, 480 grs. to the ounce of water, was applied to the ulcerated parts, and Fowler's solution in five-drop doses, gradually increased to ten drops, was administered internally. Under this treatment some little improvement was visible in the growth on the pillars and hard palate.

March 24th.—The patient complained of violent and continuous cough, the cause of which was referred to the papillated mass on the right side of the base of the tongue, which has increased, and is pressing on the epiglottis. The larynx was washed with a 40-grain solution of nitrate of silver, and the saturated solution applied to the mass. Cod-liver oil and iron was prescribed, and such palliative measures as were necessary were made use of (morphia, etc.).

The patient continued in this condition with but little change, the treatment being steadily kept up, until the latter part of August, when her general condition began to improve, the cough diminishing, and the masses on the palate and pillars becoming smaller. The infiltration of the larynx was less, and the vocal cord of the left side visible. There was at this time a worm-eaten erosion on the upper border of the epiglottis. In October the patient complained of a sensation of choking in damp weather. There was pain in the throat. The growth had increased and there was an appearance of ulceration on the right side of the larynx. There was a white spot on the right posterior pillar, and the granulations which had almost disappeared from the roof of the mouth had returned. There was also a line of redness around the gums.

In January, 1880, the epiglottis was nearly normal, the right vocal

cord was visible, the left being again obscured by the thickening of that side of the larynx. There was no dysphagia, but the voice was still impaired, principally due to the presence of a mass on the anterior surface of the posterior wall of the larynx, preventing the cords from approximating sufficiently.

Applications of a solution of perchloride of iron, 120 grs. to the ounce, were now made to the diseased parts, and from this time the case steadily improved. In April some infiltration was discovered below the left vocal cord, which has disappeared, however, in the steady march of improvement.

In November, 1880, the patient was almost entirely well. There was some slight granular roughness on the epiglottis. Both cords were visible, presenting a streaked, muddy appearance, and the voice was slightly hoarse.

At the present time, May, 1881, there is some slight infiltration, with redness of the anterior pillar of the left side, a very little thickening of the left ventricular band, the interarytenoid growth has disappeared, the epiglottis is normal, and the voice almost, though not quite, natural, being somewhat muffled. There is no cough. The patient is in good general health, well nourished, and apparently steadily progressing toward complete recovery. She still takes cod liver oil, and occasional applications are made to the parts not yet entirely restored to the normal condition.

I have deemed this case worthy of being reported to the Association, inasmuch as so few cases of this disease, unassociated with external manifestations, have been recorded, and from the fact that this case of a disease which we are accustomed to consider as of most unfavorable prognosis, has steadily though slowly progressed toward recovery.

Mackenzie, Cohen, Tuerck, and Ziemssen, in their treatises on diseases of the throat, mention but few cases—all, with the exception of two cases of Mackenzie,\* and the cases of Berengier and Lefferts, cited by Cohen,† being drawn from German sources. While, in truth, the study of the disease dates from a comparatively recent period, yet it has had more attention given to it than one would suppose from the perusal of the systematic treatises on disease of the throat; but, unfortunately, the giving of different names to

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\* Mackenzie : Diseases of throat and nose, p. 385.

† Cohen : Diseases of throat and nasal passages, p. 529.

the same disease has caused confusion. The French school consider lupus as of strumous origin, and describe its manifestation in the throat as the result of scrofula, while Virchow\* and the German school repel this theory, and consider the creation of a scrofulous lupus as something entirely arbitrary. Mackenzie† says of lupus, that it probably originates in some constitutional defect, which is either of the same nature as scrofula, or closely allied to it. Rayer,‡ in 1835, speaks of lupus extending to the pituitary membrane, involving the nasal passages and the mucous membrane of the hard palate. Alibert and Devergie also mention this extension of lupus to the mucous membranes. So, too, Cazenave,§ who also calls attention to ulcerative inflammation of the mucous membranes apart from any alteration of the skin.

Hamilton || (1845), in some notes of hospital cases, describes a disease which he believes to be lupoid, commencing with tubercle in the palate, and which he says is not to be mistaken. He speaks of a form in which the ulceration attacks the velum and uvula, destroying these parts gradually, and may reach the pillars and posterior wall of the pharynx, causing adhesions, the malady being accompanied by troubles of deglutition, phonation, etc. He also says, that where there is a syphilitic taint the ulceration sometimes extends to the larynx.

Bazin, in his "Traité de la Scrofule," speaks of this disease of the mucous membranes as a manifestation of scrofula. Isambert, in 1871, read a paper on scrofulous angina before the Société Médicale des Hôpitaux, ¶ of Paris; Fougere,\*\* a thesis the same year; Paul, in 1872, a paper on malignant ulcerous angina, or lupus of the throat.

Desnos,†† the same year, says: "This variety of angina is little known as yet. It offers difficulties of interpretation."

\* Virchow: Pathologie des tumeurs traduc., Aronsohn, tome II, p. 486.

† *Op. cit.*, p. 385.

‡ Traité des maladies de la peau, p. 195.

§ Traité des mal. de la peau et syphilis, tome iv, p. 171.

|| *Dublin Journ. Med. Sci.*, Nov., 1845.

¶ *Memoirs*, p. 107.

\*\* *Thèse de Paris*, 1871, No. 37.

†† *Nouv. Dict. de Med. et de Chir. prolugu.*, tome ii, p. 485.

Landrieux,\* in 1874, and Homolle,† in 1875, described this disease. Cazin, in the *Annales des Maladies de l' Oreille et du Larynx*, fevrier, 1880, mentions a case of lupus of the velum and isthmus of the fauces cured by an erysipelas. The French authors all consider it a manifestation of scrofula, and describe it under the name of scrofulous angina, hypertrophic tubercular scrofulide, and lupus of the throat. Homolle has given the best account of the disease in his monograph, dividing the subject into those cases in which lupus of the face is accompanied by lesion of the deeper parts, and where the alterations are seated exclusively in the mucous membrane, without any implication of the skin. Lefferts describes a case in the *American Journal of Medical Science*, April, 1878. Nearly all of these cases accompanied, or were consequent on, lupus of the face.

The functional symptoms of primary lupus of the throat are very slight. There is but little pain, and the disease may progress even to cicatrization without the patient being aware of its existence.

In three cases mentioned by Homolle, two had no knowledge of any trouble antecedent to cicatrization. One did recall some slight annoyance having been felt in the fauces, while in a case observed by M. Fougere, the velum and part of the palatine vault had been destroyed without much annoyance having been experienced.

In cases where the trouble begins in the throat, the absence of painful phenomena is not so constant.

*Cough* is rare, and apparently depends on the extent of the lesion. In my own case its presence was due to the tubercular masses at the base of the tongue pressing on the epiglottis.

*Deglutition* is usually more or less affected; and *phonation* is modified, the voice becoming hoarse or muffled.

The disease generally takes its point of departure from the velum or pillar; at all events, they are the parts first noticed as affected; both sides are not necessarily affected; sometimes only one side is so. In a case seen by me—not under my care—the disease involved but one side of the

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\* *Archiv de Med.*, Dec., 1874.

† Des scrofulides graves de la muqueuse Bucco-pharyngienne.

hard palate and pillars. The affected surface soon becomes changed in color and form. It assumes a deeper tint, and gradually becomes covered with little nodules and tumefactions. When erosion begins, it progresses slowly, the parts long retaining their natural form, but melting down, as it were, by a gradual process of wearing away. Lefferts describes his case as having a worm-eaten appearance. In some described cases adhesion took place between the posterior pillars and velum and the wall of the pharynx, leaving but a small aperture of communication between the nose and throat, while in the case mentioned above, this passage was entirely closed. When the epiglottis is affected, there may be simple tumefaction, with nodular masses, or masses with erosion; or there may be, as in Tuerck's case, deep ulceration, where there was a heart-shaped piece ulcerated out of its centre.

In a case of M. Desnos there was nothing left of the epiglottis but a sort of sprouting stump. The ventricular bands may be implicated in the tumefaction, and fleshy excrescences be observed on them. The vocal cords may undergo the same change, attended with redness, and nodules may even be observed below them. In the pharynx we frequently find radiated cicatrices, the origin of which may be unknown to the patient.

Certain complications may accompany this disease. The ganglia of the neck are sometimes slightly enlarged,\* while according to Landrieux, an important fact in the history of the angina is that the lymphatic ganglia in no way participate in the disease, the same integrity of the ganglia being noticeable in lupus of the face. Otorrhœa—in fact any of the strumous accidents—may occur. Tubercular disease of the lung may follow, and even œdema of the glottis has been observed.† The progress of the disease is very insidious, the trouble going on for a long while before the patient is aware of it; and even then its march is usually extremely slow, though cases of rapid progression have been reported.

The disease is chiefly observed among young people. In

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\* Homolle: *Op. cit.*, p. 63.

† Homolle: *Op. cit.*

23 cases,\* where the beginning of the disease was noted, there were:

4	cases	beginning	before	10	years	of	age.
6	"	"		between	10	and	15 years of age.
8	"	"	"	15	and	20	"
3	"	"	"	30	and	40	"
1	case	"	at	40			"
1	"	"	at	44			"

Females seem to be more liable to the disease than men.

*Diagnosis.*—The diagnosis between lupus and syphilitic ulceration is sometimes extremely difficult in those cases where there is no external manifestation of disease.

Landrieux † says that "the diagnosis of this disease presents the greatest difficulties. In some cases it is impossible to distinguish it from syphilitic trouble—in cases where a strumous person has contracted syphilis." Homolle (p. 100) says that "the diagnosis is always difficult. We must continually bear syphilis in mind, and make a complete examination of the patient." No conclusion can be drawn from the site of the lesion, as syphilitic troubles are very likely to occur in the same localities, though we may more correctly diagnose syphilis when the ulceration is primarily found on the pillars or tonsils. The velum is the spot where we almost exclusively find primary lupus of the throat, the pillars, tonsils, and pharynx being attacked secondarily.

The papillated or nodular appearance which lupus presents on the velum and pillar, with the tendency to ulceration and adhesion to the wall of the pharynx, is not common in syphilis, though syphilides of this character have been observed. It will always be well to examine the ulcers themselves in cases where they exist. In syphilis the tertiary form of sore throat is more like the one under consideration, but in syphilis the ulcers are more cleanly cut, deeper, and more penetrating. The suppuration is more abundant, and the ganglia are more or less involved. The mucous membrane around a syphilitic ulcer is tumefied evenly; in the lupus ulceration, it is swelled also, but it is

\* Homolle: *Op. cit.*, p. 69.

† *Op. cit.*

more likely to be irregularly so. In syphilis the color of the mucous membrane is deeper, and the bottom of the ulcer is more apt to be fungous than purulent. Besides, as Virchow \* remarks, the very slow progress of lupus, which often extends through entire years; its seat, which for the most part is limited; the absence of pain; the little effect it has on general nutrition,—all suffice to distinguish it from syphilis. The functional symptoms amount to nothing in making a diagnosis. The length of time that the disease has lasted must be taken into consideration, an ulceration that progresses slowly and has lasted for years being more likely to be lupus than syphilis. Treatment has been used as a means of diagnosis from syphilis. The results of the method may evidently be deceptive, as scrofula is sometimes improved by the mixed treatment, while syphilis may resist it. In order to make a thorough diagnosis of this affection, it will be necessary to examine carefully not only all the symptoms connected with the lesion itself, but all accompanying ones. The whole body should be inspected for eruptions or cicatrices; the state of the eyes, ears, and nose taken into consideration; and, above all, inquiry should be made into the family history of the patient for evidences of antecedent disease.

Lupus might be confounded with epithelioma of the pharynx. Epithelioma differs, however, in having the vegetations more unequal, harder, and paler. And there is usually a large ulceration with everted edges and an ichorous base. No diagnostic value can be placed on the presence of a radiated cicatrix in the pharynx. Virchow† regards it as an evidence of syphilis, but such cicatrices undoubtedly exist in cases where no hereditary or acquired trouble can be demonstrated.

The *prognosis* of lupus is not a favorable one. The disease may not destroy life, but its complete and permanent cure is a matter of great uncertainty.

*Treatment.*—The treatment of lupus must necessarily be constitutional as well as local. Internally, cod liver oil, syrup of the iodide of iron, and iodide of potash have been

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\* Virchow: *Op. cit.*, p. 485.

† “Syphilis Constitutionnelle,” p. 61, obs. vi.

recommended. The iodide does well in the cases where a syphilitic taint exists. Cod liver oil is particularly advised where the disease is limited to the throat. Fresh air, exercise, generous diet, sea bathing,—all are important adjuncts in the treatment of this disease.

Locally, various methods are employed.

Tincture of iodine,\* solid nitrate of silver, solutions of chromic acid, chloride of zinc, and nitrate of silver,† diluted more or less according to circumstances, have all been recommended. In the case reported I found that solid nitrate of silver, or a saturated solution, did well. After improvement was manifested, a solution of perchloride of iron, 3 ii to water  $\frac{3}{4}$  j, was used, under which the tendency to recovery continued.

From this sketch it will be seen that this disease presents many difficulties to the practitioner, and it is with the hope that some of the doubtful points will elicit a discussion, which will throw some light on the subject, that I present this case.

Is lupus of the throat a disease of strumous origin as the French writers declare, or is it a distinct disease as Virchow believes? Is it always possible in cases where there is no cutaneous lesion to draw the distinction between it and the lesions of syphilis? And what is the prospect of recovery? These are the questions which I hope the experience of the members will tend to solve.

For my own part, it seems to me that the following conclusions can be fairly stated:

1. That lupus of the mucous membrane may and does exist independent of any cutaneous sign of the disease.
2. That in cases where the disease exists only in the throat it shows itself first usually in the velum, while its extension to the larynx is rare.
3. That while its diagnosis is difficult, yet careful study of the case, in all its bearings, will enable us to distinguish it from syphilis.
4. That treatment affords some reasonable hope of cure, and that its prognosis is not altogether hopeless.

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\* Mackenzie, *op. cit.*

† Homolle, *op. cit.*

## CLINICAL NOTES.

### A CASE OF RECURRING LARYNGEAL GROWTH.

By J. H. HARTMAN, M. D.,

BALTIMORE.

In the *Virginia Medical Monthly* for June, 1878, I reported a series of cases of intralaryngeal growths removed through the natural passages, one of which being a case of papillomatous growth, occupying the entire interarytenoid commissure, which was successfully removed in June, 1873, with complete restoration of the vocal function. The case was illustrated by a drawing, which is reproduced here for the purpose of comparison.

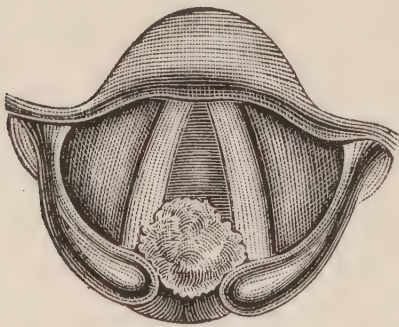


FIG. 1.

This patient was seen by me respectively four, nine, sixteen, twenty-seven, and forty-five months after the operation, and during this period he had had no inconvenience whatever from his former trouble.

On November 16, 1880, the patient again reported to me, with the statement that, after contracting a severe cold the previous

March, followed by a slight sore throat, he had been somewhat annoyed by a huskiness of his voice and irritation in the larynx, which had been gradually growing worse, until, within the last two or three months, when his condition had become so much aggravated, that he feared a return of his former trouble.

The laryngoscopic examination revealed a recurrence of the growth, situated partially upon its former seat, but much more extensive than the previous one, and extending along the superior

portion of the right vocal cord, irregular in outline, and filling up at least two-thirds of the glottis. Great dyspnœa was present, and voice very aphonic.

Instrumental interference was called into requisition a second time, and on November 27th half of the growth, and on December 4th the remaining portion, was removed.

The result was highly satisfactory, the patient recovering a good voice, being discharged well December 23d.

Recurrence of a laryngeal growth after complete and perfect removal is rarely met with, this being the first case which has come directly under my own observation.

That there was complete removal of every particle of the first growth I had a number of opportunities to verify, as the patient was under observation at short intervals for nearly four years after the first operation, up to which time there had been no inconvenience, and the larynx, to all appearances, in a normal condition. Further, the patient, according to his own statement, was entirely free from any laryngeal disturbance from that date to March, 1880, at which time, no doubt, the foundation for the second development of the neoplasm was laid.

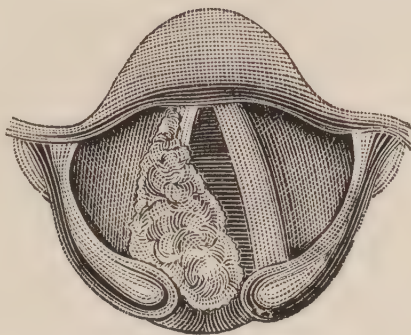


FIG. 2.

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#### HYSTERICAL PARALYSIS OF THE CRICO-ARYTENOIDEI POSTICI MUSCLES OF THE LARYNX.

By WILLIAM C. GLASGOW, M.D.,

ST. LOUIS.

Lizzie H., a robust German girl, 16 years of age, was brought to my office by the family physician, Dr. Pollock, on account of dyspnœa and loss of voice. There was complete aphonia and a strongly-marked inspiratory stridor that could be heard at a distance; this was painfully increased by the slightest exertion. This condition had been noticed on waking in the morning some six weeks before, and had been persistent; the dyspnœa varied at times in intensity.

Her health, previous to the attack, had been excellent. She had menstruated at 14 ; during the periods she had had slight pain ; otherwise normal.

The heart was beating tumultuously with a quick forcible apex beat ; the sounds accentuated with a ringing quality. The respiratory murmur was generally intensified, otherwise normal.

A laryngoscopic examination showed the vocal cords fixed and immovable at the median line, a line of opening appearing along their entire length. Larynx otherwise normal. A case of paralysis of the adductor muscles of the larynx.

The Faradic current was applied by means of the laryngeal electrode ; also externally over the larynx. She was also ordered tinct. digitalis in five-drop doses.

She returned on the second day, when a marked improvement in breathing was noticed ; when quiet, the stridor was less marked, but it was increased by exertion ; there was no movement of the cords, and aphonia remained. The battery was again applied.

On the fifth day I saw her again. She was still aphonic, with no change in the position of the cords. Her breathing had greatly improved.

On the eighth day, when she called, she at once spoke to me in a loud, clear voice. Her breathing seemed perfectly normal.

On examination, the cords were found acting perfectly. The heart had become quiet, and the sounds normal. The respiratory murmur had also resumed its natural softness.

I saw her, for the last time, on the tenth day. She seemed perfectly well ; her mind was clear, and she spoke, amongst other things, of her sorrow at being the cause of so much expense to her parents on account of her sickness.

Some six weeks later she was brought again to see me, with the statement that latterly she had become utterly unmanageable ; she would abuse and spit at any one passing, and had become so violent in her actions that her parents wished to have her confined in the asylum. During my conversation with her father, she remained standing, with her eyes fixed on the floor ; when addressed, she made no sign, except by looking alternately at me and at the floor. Her eyes presented that wild look seen in hysteria. I considered her condition as one of hysterical mania.

A few days later, she was placed in the asylum, and through the kindness of the superintendent, Dr. D. V. Howard, I can give her subsequent history.

Her case was classified as one of acute mania, with a hysterical element ; there was a hereditary tendency, and the course of the disorder was attended by appreciable cerebral hyperæmia. There was a slight exacerbation during the monthly periods. There were no hallucinations or delusions, and she was at no time violent. No recurrence of abnormal laryngeal symptoms were noticed.

The girl remained in the asylum nine months, when she was discharged as cured.

The symptoms and history of this case prove conclusively the nature of her disorder, and her subsequent cerebral symptoms simply confirm it as a case of hysteria.

## REVIEWS AND BOOK NOTICES.

**Handbuch der Pathologischen Anatomie.** Von Dr. E. KLEBS, o.ö Professor der pathologischen Anatomie in Prag. Siebente Lieferung, Larynx, Trachea. Bearbeitet von Dr. Hans Eppinger, a.ö Professor der pathologischen Anatomie in Prag. Mit 24 Holzschnitten. Berlin, 1880. Verlag von August Hirschwald. N. W. unter den Linden 68.

This book, the seventh volume of the "Handbook of Pathological Anatomy," edited by Dr. E. Klebs, of Prague, is devoted entirely to the larynx and trachea. While the author cannot lay claim to originality either in the design or the execution of the work, it is still possessed of considerable merit as presenting, with tolerable clearness and in a convenient form, a comparative statement of the most generally accepted views upon the subjects of which it treats.

The book is divided into two parts, devoted to the larynx and trachea respectively. The first chapter describes the congenital malformations of the larynx—absence, excessive development, fissure, and variations of form and position. In the next chapter, upon pathological conditions of the larynx taken as a whole, are considered alterations of position, of form and size, wounds, and foreign bodies, the latter including an interesting account of the parasites occasionally found. Then follows a consideration of the pathological changes of the mucous membrane, anomalous color, hyperæmia, hemorrhage, anæmia, catarrhal laryngitis, croupous laryngitis, and, finally, diphtheritic laryngitis. As to the distinction between the fibrinous exudations of croup and diphtheria, the author holds strongly to the opinion that the presence of the diphtheritic microspore is absolutely necessary to the establishment of a diagnosis of diphtheria. Where it cannot be found, the exudation is croupous. He describes these microspores somewhat indefinitely as appearing under the microscope in the form

of spherical or rod-shaped objects, scattered among the epithelia cells. From this standpoint, true diphtheritic laryngitis must be extremely rare, and, in the author's opinion, it is always a symptom of general constitutional disease. Of croupous laryngitis, three distinct varieties are described: 1st, an entirely local affection, which may extend upward into the nares or downward into the trachea; 2d, the exudations may complicate acute or chronic inflammations of other organs—this variety is rare; or, 3d, it may occur in the course of various infectious and mycotic diseases. This last constitutes the metastatic form.

In the chapter upon deep-seated lesions of the larynx, after considering oedema, phlegmon, and necrosis, the author discusses at some length the laryngeal lesions found in typhus and typhoid fever, scarlatina, morbilli, variola, malleus humidus (glanders), and leukæmia. The section upon typhoid fever is particularly interesting and elaborate; although it would seem to prove that ulcerative processes of the larynx in this disease are less common here than in Europe. The author attributes the lesion, in great measure, to local infection, and illustrates the article with five wood-cuts, which are intended to support this theory. The chapter upon leucocytoses includes syphilis, tuberculosis, lupus, and lepra. In tuberculous laryngitis, the author believes in the existence of miliary tubercles beneath the ulcers. Lupus he considers to be more common than is generally supposed. It is usually associated with disease of the skin, or is a continuation of a like affection in the pharynx. It may very easily be mistaken for syphilis or tuberculosis, so that to make a positive diagnosis it is necessary to observe the lupus upon the skin or pharynx, or to be able to exclude the other two affections. A lupoid ulcer may become septic, and result in perichondritis, with exfoliation of the entire cartilage. Tumors of the larynx, the author divides into three varieties: 1st, connective-tissue tumors; 2d, epithelial tumors—the adenoma and carcinoma; and, 3d, organized tumors—polyps, cysts, and thyroceles. The first embraces the fibroma, lipoma, sarcoma, and the lymphoma. Of these the fibroma has received the most attention, the author's views upon this subject being unusual. He makes of the fibroma two varieties, the papillary fibroma and the fibroma tuberosum. The former is the ordinary papilloma, the most frequent of the laryngeal tumors. It is benign in its nature, and, after removal, is likely to return within six weeks of the date of the operation, or not to reappear at all. Under the second variety

he classes the ordinary fibrous polyps of the larynx. These may be the result of hemorrhage, pigmentation, thrombosis, and, in very rare instances, of amyloid degeneration. The smaller and more sessile these tumors are, the greater is their density and hardness. Myxoma, the author believes, is never found in the larynx. Those so called have probably been modified fibromas. The etiology of fibroma is obscure, but it is suggested that it may be due to laceration of the connective-tissue layer of the cords, which disturbs the circulation of the part and possibly originates a fibroma.

The last chapter is devoted to the pathological changes of the laryngeal cartilages. These are atrophy and degeneration, hypertrophy (enchondroma, exostosis) and perichondritis. Degeneration may occur in senile or in cachectic subjects. Fatty degeneration may occur, but this is always limited to a part of the cartilage, never attacking the whole. In certain conditions the cartilage may become infiltrated with urate of soda, and a case is quoted in which pigmentation was due to infiltration of bile pigment.

The second part of the work, relating to the trachea, is classified in the same manner as the first, and in most respects is similar to it.

Taken as a whole, the book is a good one, although the author's pathological views may, in many instances, be called in question, and his researches in the literature of the subject have not extended far beyond his own language. [D. B. D.]

**A manual of diseases of the throat and nose.** By FRANCKE HUNTINGTON BOSWORTH, A.M., M.D., Lecturer on Diseases of the Throat in the Bellevue Hospital Medical College, and Physician-in-Charge of the Clinic for Diseases of the Throat in the out-door department of Bellevue Hospital, etc., etc., etc. New York : William Wood & Company, 1881. 427 pp., 8°.

Dr. Bosworth's book is published as a manual of the more common affections of the throat and nose. As stated in the preface, it is a record of personal experience. We think a mistake is made in the plan of the book in omitting all consideration of diphtheria, on the ground that it belongs more properly to general medicine, for the student will, naturally, turn to special treatises for nicer points in diagnosis and treatment, especially such as can be determined only by the aid of the laryngoscope.

The anatomical, physiological, and clinical descriptions are good.

Differential diagnosis, especially of the ulcerations of phthisis, scrofula, and syphilis, is represented as usually a much more simple matter than most of us have found it. The therapeutics are simply a record of the methods pursued by the author, and we must say that, while positivism is always satisfactory, especially in the matter of the treatment of disease, we can not but feel that Dr. Bosworth advocates one method and condemns or omits all mention of another without sufficient reason. On this account the reader will get a very narrow idea of treatment. The whole subject of local treatment of affections of the throat and nose is still in a more or less chaotic condition, and we think that something more than mere expression of opinion, without facts or recorded experiments and observation, is necessary to settle points in controversy. The author throws himself open so constantly to discussion on these points, by his dogmatic way of recommending one method and ignoring others, that to discuss them would require far more space than we have at our command. There are few, if any, really new methods of treatment proposed, but many original suggestions as to details.

The book is noticeable, especially for the advocacy of sprays in preference to the brush or sponge in the local treatment of the larynx, and for the urgent advocacy of the extirpation of hypertrophied tissue in chronic nasal catarrh by galvano-cautery or the Jarvis snare. Dr. Bosworth would never introduce a brush or sponge, or even a pledget of cotton (which he prefers to brush or sponge), except in case of pendent epiglottis, in which the spray evidently cannot reach the vocal cords. We do not think there is any evidence to show that the brush or sponge, properly used, does harm, and also feel very sure that cases of chronic catarrh of the vocal cords, with thickening of the mucous membrane, are much better treated by the proper application of strong solutions by means of the brush or sponge than by the spray. For ourselves, we think the objection to the brush or sponge, properly used, theoretical and imaginary. The author several times calls the steam atomizer "a rather ingenious and attractive little instrument," and says that it is, without question, an instrument of mischief, if improperly used. He says that, as the rule, it should never be used in chronic catarrhal inflammation, as the hot steam has a tendency to produce relaxation and congestion of the parts. We have several times tested the temperature of the steam, as it emerged from the

shield of the Codman and Shurtleff atomizer, and have found it ranging from 95° to 100° Fahrenheit when the shield was pulled out to the end of the slide of the atomizer. So it seems to us, if the steam may be obtained so near the natural temperature of the body, that this objection may be somewhat theoretical also.

The extent to which the destructive methods, galvano-cautery, etc., should be used has not yet been determined.

A few points in the chapter on the use of the laryngoscope require special notice. On page 9, in order to bring the vocal cords into view, it is said that the patient should sound a high-pitched and prolonged "Ah," as in this manner the laryngeal cavity is brought thoroughly into view. We should say, on the contrary, that by this manœuvre, the laryngeal cavity was usually thoroughly covered up by the depression of the epiglottis. Nevertheless, we have no doubt that by sounding a very high-pitched "Ah" the vocal cords *may* be seen; we think, however, the old method of sounding "E" (as in met) or "E" (as in mete), if a higher note is necessary, much preferable. We do not think that the recommendation on page 12 that, "other methods failing, the throat may be irritated purposely to such an extent as to bring on retching, when, during the act, a momentary glimpse of the larynx may be gained," would be usually productive of much success, as the ventricular bands are closed by this operation. On page 25 it is said that the patient should be placed in the same position for rhinoscopy as that for the examination of the larynx. A student would infer from this, that the head was to be thrown well back as described for laryngoscopy, which we presume was not the author's intention. On page 27 it is stated "that the position of the mirror (for posterior rhinoscopy) should be at a right angle with the line of vision," which would reflect the light back to the observer's eye rather than into the posterior nares.

We think many sensitive patients will take issue on the statement that three factors are generally necessary for "taking cold," viz.; low temperature, air in motion, and moisture, having caught many by sitting in a room, the temperature of which was below that to which they were accustomed, even when there was no draught nor dampness. In another place the author says, without qualification, that "exposure to a low temperature alone is not sufficient to produce a coryza." On page 77 the old physiological doctrine is maintained that the epiglottis falls upon and covers the rima glottidis (during deglutition), thus preventing food from making its way into the air passages.

Dr. Bosworth claims that complete resolution does not, as a rule, take place in acute catarrhal inflammations which are allowed to go on without treatment, but that certain simple measures easily accomplish this object. Nitrate of silver is considered by Dr. Bosworth as a most efficient remedy in chronic inflammation of the pharynx and larynx, but only when used in weak solution, five or ten grains, never exceeding twenty, to the ounce. We do not understand on what principle the proper use of gargles is described as an efficient method for reaching the diseased parts in *acute* catarrhal pharyngitis, and of but little benefit in *chronic* catarrhal pharyngitis. In the treatment of enlarged follicles in the pharynx, the author prefers actual cautery by means of a small red-hot wire.

We do not think that the present condition of pathological knowledge warrants us in drawing such distinction as is made on page 107, and following, between "membranous sore throat or croupous pharyngitis" and diphtheria.

The author is orthodox in the internal treatment of syphilis. Locally, he treats mucous patches with nitrate of silver, nitric acid, and acid nitrate of mercury. For the treatment of superficial ulcerations, he considers that we have in iodoform a remedy whose specific action in arresting their progress leaves nothing to be desired. He also considers it the best application for tertiary or deep ulcerations.

On page 159, after an excellent description of tuberculosis of the pharynx as exhibited in a patient, the author gives an illustration of what we alluded to early in this notice, viz., of his desire to make differential diagnosis exact, by giving a tabular view of the prominent characteristics of the three forms of ulcerative action, saying that the diagnosis is quite simple to one familiar with the laryngoscopic appearances in laryngeal phthisis in the ulcerative stage; but he takes the value entirely out of this statement by the concluding paragraph of the same sentence, in which he says: "yet as careful an observer as Fraenkel made the mistake of placing patients suffering from this disease under anti-syphilitic treatment," and, of course, there is no doubt that Fraenkel is perfectly familiar with the laryngoscopic appearances in laryngeal phthisis. The term *ozæna* is restricted to disease of the accessory cavities. Snares are properly recommended for the removal of nasal polypi.

The chapters on diseases of the larynx are good, but do not re-

quire extended analysis. Dr. Bosworth attaches rather more importance to the popular idea of nasal catarrh being a cause of laryngeal catarrh, than is done by most writers, in which, we dare say, he may be correct.

The author states, in the preface, that he has departed from the original plan of the book in treating of some subjects at considerable length, as laryngeal phthisis, bilateral paralysis of the abductors, etc. He says he has done this designedly, with the object of introducing personal views and methods of treatment, which are not given in other works, and which he regards as worthy of consideration. The claim to personal views has a much stronger foundation in the chapter on laryngeal phthisis than anywhere else in the book ; for, after an excellent description of the more common mode of development of this disease, the author says : “ that while diagnosis is not difficult in the later stages, the question becomes an extremely important one, whether we have any certain means of recognizing the disease in the first stage, for I am confident that when early recognized it is in our power, in certainly a large majority of cases, to arrest its farther progress. The condition described as the first stage of the disease, viz., the club-shaped arytenoid cartilages, is believed to be pathognomonic of laryngeal phthisis, and is found in no other disease.”

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“ In the earlier stages the disease is curable in probably the majority of cases ; and even after the occurrence of extensive ulceration and destruction of tissue I have seen cases recover.”

The treatment consists of four steps which are regarded as of importance : “ 1st, the thorough cleansing of the parts preparatory to the more special application ; 2d, the application of such mild astringents, alteratives, or resolvents, as may be indicated ; 3d, the application of an anodyne to relieve pain or irritability and to correct irritation caused by the previous remedies ; 4th, the application of iodoform as a specific in its action on ulcerations of mucous membranes.”

The question of tracheotomy for securing rest to the larynx when local remedies fail to relieve, before it is demanded by dyspnœa from stenosis, is favorably entertained.

This is certainly a very important question, and the views of the author, obtained in the midst of a large clinical material, are entitled to careful consideration at the hands of the profession. Therefore, we feel that the author has devoted too little space—

twelve pages out of four hundred and twenty-seven—to this subject. If he could, in a few additional ones, have given us an exact account of a few of his best cases, laryngoscopic appearances and general symptoms, both before and after treatment, duration of treatment, period of subsequent immunity from the disease on the part of the patient, etc., we think the space would have been well taken. The question of early diagnosis by laryngoscopic signs would be a stumbling-block oftener encountered, if it were not true that in a vast majority of cases pulmonary disease appears first, and also that the general symptoms usually point to something more than simple laryngitis. The bulging of the arytenoid commissure, “in such a manner as to present a rounded mass anteriorly, which oftentimes interferes with the approximation of the cords,” which is mentioned in connection with pyriform thickening of the mucous membrane covering the arytenoid cartilages as indicative of the first stage of laryngeal phthisis, is, we think, recognized as a not unusual condition in cases of simple chronic laryngeal catarrh. All men who have treated laryngeal phthisis by mild measures have seen ulcerations and swellings appear and disappear under treatment. The question remains: What constitutes a cure?

Stenosis of the larynx, the removal of laryngeal tumors (for which the author, in happy distinction from almost every other writer on this subject, offers no new instruments), tracheotomy, thyrotomy, extirpation of the larynx (with short histories of 23 cases), and the artificial vocal apparatus, receive appropriate attention.

The chapters on the neuroses of the larynx is a very good one, but we have only space to consider the one on bilateral paralysis of the abductors, to which we turned, with the hope, encouraged by the preface, of receiving, perhaps, some new light on a very obscure subject. Dr. Bosworth states at considerable length his reasons for considering the lesion in this disease a cerebral one, dwelling particularly upon the clinical histories of the thirty cases collected by him, claiming that these shed more light on the true pathology of the disease than the eight autopsies which have been made. He concludes that the respiratory function of the glottis is presided over by an independent ganglionic nerve centre, and that the disease in question consists in some degenerative change taking place in this portion of the brain. Dr. Bosworth would have strengthened his argument by introducing the experiments

of Longet and other physiologists (who held the same idea of a separate respiratory centre), which afford very much stronger evidence of the truth of this theory. It will be remembered that the pneumogastric nerve receives motor filaments, on leaving the cranial cavity, from five different nerves. It was found that while the movements of the larynx for vocalization were arrested by division of the spinal accessory alone, in order to stop the respiratory movements, either the pneumogastric must be divided or all five of the motor nerves from which their accessory filaments were derived. This field has not been thoroughly worked since the days of laryngoscopy.

There is an appendix of useful formulæ, which also abound throughout the book. There are also many illustrations, nearly every one of which, not coming from the instrument maker, has, we regret to say, been borrowed. We think a publisher ought not to oblige an author to illustrate, especially clinical and pathological work, by borrowed cuts. How much better an idea, for instance, should we have obtained of what Dr. Bosworth considers the first stage of laryngeal phthisis, and how much better an idea of what he has cured, if he had furnished some illustrations from his own cases instead of borrowing all from Mackenzie. There is a certain amount of careless composition and typography, as is usual in first editions; but it seems a little too careless, while giving directions for the observer to wear his reflector over his right eye, and for the light to be on the right side of the patient, that in the picture of the author making a laryngoscopic examination, the opposite conditions should be represented. Our space has been given to pointing out some of the little defects which seemed more apparent, rather than to laudation of points of merit. A text-book must be judged as a whole, and we think Dr. Bosworth's is a good one,—as good as most first editions. We think that the next edition, with its natural rearrangement and addition of matter, and especially with its new field of treatment as modified by increased experience, will be all that could be desired.

[F. I. K.]

# TRANSACTIONS OF SOCIETIES.

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## TRANSACTIONS

OF THE

THIRD ANNUAL CONGRESS

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION,

HELD IN THE HALL OF THE COLLEGE OF PHYSICIANS, PHILADELPHIA,  
MAY 9, 10, AND 11, 1881.

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*First day, morning session.*

### PRESIDENT'S ADDRESS.

GENTLEMEN—The year which has just expired, in the life of our Association, has abundantly evinced increasing attention to the department of medical science in which we are specially interested. Numerous monographs, on various topics of individual study and observation, have issued from the presses of the two great continents. New treatises have been published in Germany, Great Britain, and America, three of our own Fellows having entered the guild of authors with elaborate volumes. An additional journal, devoted to laryngology and its adjunct subjects, is being published in France; and similar periodicals are expected, in the immediate future, from Germany and Great Britain.

The first International Medical Congress of Laryngologists has had a very successful convention at Milan, and a laryngological sub-section of medicine has been organized for the approaching International Medical Congress at London, which bids fair, by its prospective brilliancy, to outshine the parent section that denied it equality of recognition. The courtesy has been extended to several of our Fellows to invite them to take prominent part in opening the discussions on subjects selected by the local committee. In view of the fact that several members of our body contemplate being present at this meeting and taking active part in its deliberations, it would seem desirable that they be constituted a special com-

mittee of delegates to represent this Association in the sub-section alluded to, and report at our next annual meeting such points of practical utility there brought forward, as may be of general interest to laryngologists.

Our last annual meeting was one to which we can refer with pride. The simultaneous meeting of the American Medical Association in the same city, while it drew some of our own members away, from time to time, brought us, on the other hand, a number of visitors, among them some distinguished members of the profession; and it was told your presiding officer that the decorum and dignity of the meeting, the interest manifested in its literary and scientific work, and the uniform courtesy observed in discussion, were matters of favorable comment.

Hardly, however, had our new year begun when this Association met its first dismembering loss in the death of its founder and first Vice-President, Dr. Frank H. Davis, of Chicago, for the following obituary notice of whom, I am indebted to his fellow-townsmen, Dr. E. Fletcher Ingals.

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#### OBITUARY.

FRANK H. DAVIS, M.D., the originator of the American Laryngological Association, and its first Vice-President, died in Chicago on August 17, 1880. The deceased was born in New York June 5, 1848, and the following year was taken by his parents, Nathan S. and Anna Maria Davis, to Chicago, where he resided until his death.

After preparation in the select schools of Chicago, he entered the University of Michigan, with the intention of taking a full classical course, but on account of poor health, he was obliged to relinquish the course at the end of his sophomore year.

He began the study of medicine in the office of his father, Prof. N. S. Davis, founder of the American Medical Association, in 1867, and in the same year began the course of study in the Chicago Medical College, from which he graduated with honors in 1871. After pursuing his medical course for two years, on account of some threatening pulmonary symptoms, he was sent to Europe, where he remained for sixteen months. On his return, he completed his medical course, when he again sailed for Europe, and spent some months in the study of diseases of the air passages, in the hospitals of Vienna.

Returning to his home in July, 1871, he began at once a general practice, which he continued until his last illness. Dr. Davis followed the course which should be adopted by all who intend to practise any specialty, by first grounding himself in the fundamental principles of general practice, which are so essential to the proper treatment of disease. Constantly holding in view his chosen specialty during the last few years of his life, the bulk of his work was done in this line.

He was an active member of the Chicago Medical Society, the Illinois State Medical Society, the American Medical Association, and the American Laryngological Association.

He was for several years associated with his father as editor of the *Chicago Medical Examiner*, and the fruit of his literary work may be found in numerous articles contributed to its pages, and in the transactions of the various societies to which he belonged. He was an active member of the medical staffs of the Mercy Hospital, and of the South Side Free Dispensary of Chicago.

He was interested in the collateral sciences, and possessed not only a love, but also native genius, for the fine arts. The latter is illustrated in a life-size bust of his father, modelled by his own hands.

On June 3d, 1880, Dr. Davis was suddenly prostrated by the disease which, ten weeks later, terminated his useful career.

A *post-mortem* examination determined that the chief cause of his death was an acute suppurative inflammation of the left kidney, which had been attended with so much reflex irritation of the stomach, that for the last three weeks of his life he had been sustained entirely by nutritive enemata.

He left a wife, the daughter of Prof. Oliver Marcy, of Evanston, and two children. Dr. Davis, in his brief professional career of only nine years, accomplished what, to most men with his feeble physical powers, would have been an impossibility.

He built for himself a lucrative practice; he made for himself an honored place in the profession of the nation, and when, in his early manhood, he lay down for that final sleep, he left a large circle to mourn in him the loss of a genial friend, a kind and cultivated physician, and an amiable Christian gentleman.

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I would ask that an appropriate position be given to this brief biographic sketch of our dead Fellow in the volume of transactions for the present year.

The close sequence of our meetings upon those of the American Medical Association is apt to interfere somewhat with the attendance. Some of our Fellows have affiliations of long standing with the American Medical Association; others find it difficult and even impossible to give such attention to both organizations as they would like to do, as attendance upon both necessitates too prolonged an absence from their duties to their patients. Others, members of the American Medical Association, who would like to become closely associated with us, are deterred from having their claims to fellowship presented, for the same reason. It has been suggested to me, that the attention of this Association be called to this circumstance, for the purpose of taking into consideration the propriety of convening our annual sessions at a period more remote from that at which the American Medical Association meets, and without reference to the other organization. The inference is, that we might secure a fuller attendance, and thus the better promote the objects of our own organization.

It might be well for the Committee on Nominations to discuss this point, in suggesting the date for our next annual gathering.

It is a question for serious consideration whether this Association has adopted the most useful method of publishing its transactions? As a result of our dependence upon journalism, two years have elapsed without bringing us the promised volumes of the transactions of our first annual convention, and it is only within the past week that we have been presented in due form with the completed transactions of the session of last year.

This delay is entirely too great; it gives little encouragement to members to prepare important and instructive papers, and postpones too long the leisure-perusal of papers which may have excited the keenest interest a year previous. It is quite possible that our membership is now sufficient to provide for the printing of our transactions immediately after the adjournment of the session, independently of any assistance from periodicals, and without entailing undue expense upon any Fellow. The necessary addition to the treasury for this purpose might be secured by individual subscription, entitling each contributor to a proportionate distribution of the number of volumes issued. An estimate, from

a reliable publishing house, of the probable cost of publishing our transactions is appended to this address, for the use of the Association.

Perhaps it may be best to publish only a mere annual record of our proceedings, indicating by title the papers presented, and allowing them to be published in detail in any journal that may be selected by their authors.

The volume of transactions presented by the Council is a credit to us, both as laryngologists and American practitioners.

The subject of increasing our Fellowship is one which should engage our attention, inasmuch as our acceptance of the gentlemen recommended for Fellowship by the Council will increase our number to within six of the full quota.

Uniformity of terms in designating anatomical structure, morbid condition, and pathological product, is much to be desired in facilitating individual study and due comprehension of published observations.

Your Committee on Nomenclature present a report, in this connection, to which I would ask your earnest attention. In view of the fact that a similar committee is to report next year at the Convention of the International Congress of Laryngologists in Paris, it is important that American laryngologists, as a representative body, present a united front and a well-digested selection of terms. For two years your Committee on Nomenclature have endeavored to fulfil the duty assigned them. Circumstances have prevented the presentation of a complete report. The one to be submitted includes the anatomical and pathological nomenclature of the larynx and trachea only ; but it will probably be as much as the Association will have time to discuss. As great difficulty exists in securing full attendance of the committee on account of the residence of its members in different cities, it appears to me that it would be judicious to discharge the present committee and select a new one to continue the work, the members of which shall all be residents of one city, so as to ensure as frequent conferences as may be requisite to perform the work in a satisfactory manner.

Among the interesting subjects presented to the consideration of laryngologists within the past year, is the use of electricity as a direct illuminating agent. Two forms of apparatus have been brought forward ; one by direct incandescence of a platinum wire, the other by incandescence of a spiral vacuum tube, modelled on

the tubes of Geissler. My own experience with the specimens of these apparatuses with which I had been furnished, was unsatisfactory. In the one instrument, the platinum wire melted before reaching a white heat ; with the other, I could get no illumination whatever. The field, however, seems, on theoretical grounds, a promising and attractive one for the ingenuity of our younger members who may have time at their disposal for the prosecution of the necessary preliminary physical experiments.

Although irritability of the throat does not often prevent a skilled manipulator from successfully inspecting the interior of the larynx, yet we all know that cases are occasionally encountered which, at the first interview, defy the ingenuity of the most skilled. The method of reducing this hypersensitiveness recently suggested by Rossbach, and consisting in interrupting the nervous influence by freezing the superior laryngeal nerve at the point where it penetrates the thyro-hyoid membrane, at which point it is superficial and covered simply by the integument, is well worthy of close investigation. The freezing is produced by the propulsion of a spray of ether.

Although this plan does not always succeed it will frequently be found to be satisfactory in its immediate results.

The employment of pilocarpin in diphtheria for the purpose of exciting hyper-secretion from the mucous membrane of the throat, and thus mechanically lifting the pseudo-membrane from its seat, has been resorted to by a few practitioners whose recorded observations are sufficiently encouraging to justify systematic investigation of its merits. As yet I have had no occasion to make any personal test of this effect of the remedy. The incompatibility of cardiac depressants in the treatment of systemic diphtheria makes it questionable, in my mind, on theoretic grounds, whether, on the whole, the deleterious effects of the drug may not counterbalance any special advantages it may possess.

In the constitutional treatment of chronic inflammations of the nasal and naso-pharyngeal mucous membrane, I have, during the past year, observed some satisfactory results from the use of a combination of the recent powder of cubeb and salicylate of cinchonidia ; two grains each being given in capsule three or four times a day. We all know that in many broken-down subjects of nasal and post-nasal catarrh, the cinchona alkaloids are indicated both as nerve tonics and appetizers, especially in out-door clinical practice. In the same class of practice, too, and less frequently

with private patients, there is an element present due to the exposures to which these poor people are unavoidably subjected, which, for want of a more definite term, may be designated as rheumatoid. In these cases, as in ordinary chronic rheumatic affections, the salicylates are now known to be specially adapted; the combination of salicylic acid with quinia or cinchonidia seems to answer the double purpose of controlling the rheumatic element and promoting a healthy tone in the nervous system generally. The acknowledged value of cubeb in these complaints, due, as is supposed by many, to the action of the remedy in its elimination by the mucous membrane of the bronchial tract, makes it desirable, in many of these instances, to combine the cubeb with the salicylate. As far as I am personally concerned, I feel disposed to continue to use this combination.

Since our last meeting I have made more frequent use of the galvano-cautery than at any previous period of my practice, and in two obstinate chronic affections it appears to have given more satisfaction than any other routine treatment which I have employed. These affections are chronic folliculous pharyngitis and hypertrophied tonsils. The instruments I have used, and for which I have almost discarded the use of those which I previously employed, are the admirable instruments of one of our own Fellows, Dr. Shurly, of Detroit. I have found it more convenient, however, to alter the arrangement of the spring in his handle, so that the current is closed by pressure of the finger, instead of being broken in that manner.

In the treatment of the folliculous pharyngitis, I apply the probe-pointed cautery to three or four of the enlargements at each interview with the patient, and continue until a majority or all of them are destroyed. The results have, in most instances, been thoroughly satisfactory, and the patients have borne the treatment at least as well as any other manipulation.

In the reduction of hypertrophied tonsils, I use the flat-blade cautery first to the irregular prominences beyond the general outline of the enlarged gland, and then gradually burn portions of the tonsil, until the portion remaining projects little, if at all, beyond the line of the palatine folds. But one or two points are cauterized at each sitting, and usually but one tonsil is operated upon at one sitting, the other at the next. From twelve to thirty sittings are required to complete this process, which gives but little

pain, and does not interfere with the prosecution of the ordinary employments of the patient. The only drawback that I have noticed is the disagreeable odor from the sloughs, and some impairment of appetite in consequence. It is quite likely that the alternative effect of the potential cautery induces some absorption of the deeper-seated indurated tissues, and thus reduces the inner portions of the tonsil, while the external portions are undergoing actual destruction.

A rare lesion has lately come under my observation in the form of prolapse of the laryngeal sac in the person of a physician in a neighboring State. An illustrated report of the case will appear in the forthcoming number of the ARCHIVES OF LARYNGOLOGY, and I have to regret that there will be no opportunity to exhibit the case, as I had proposed to do, at this session.

And now, gentlemen, that we are about to proceed to the prescribed work of the convention, as arranged in the official programme issued by your Council, allow me again to thank you for the honor conferred upon me last year, in selecting me to preside over the deliberations of this session, and to hope that the present convention at Philadelphia will prove one to which we can all look back with pleasure and satisfaction.

*Discussion upon the Papers of Drs. Knight and Asch.\**

Dr. H. A. JOHNSON, of Chicago, being invited to open the discussion, said that he had never had the opportunity of studying the subject personally. He had seen lupus of the face, as doubtless all the Fellows had, but he had never met with a case of lupus invading the larynx, in many years' experience.

Dr. GEORGE M. LEFFERTS said that, to him, the principal interest lies in the question of diagnosis; that recently an element of doubt and uncertainty has been introduced into the subject by the papers of Homolle, and others, who class lupus among the *scrofulides*.

The diagnosis lies mainly between lupus, phthisis, and syphilis of the larynx. In a paper on the subject, published about three years ago, he had arrived at the conclusion that the differential diagnosis is narrowed down to the former two. Syphilis is easily eliminated, but the question of phthisis is sometimes extremely difficult to decide.

He had seen certain cases that were considered as lupus of the

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\* See pp. 237 and 243.

larynx ; but had doubted the diagnosis where there were no external appearances of lupus upon the face, or elsewhere. The case of Dr. Asch had been shown to him, and he had pronounced it a case of hereditary syphilis. The case of Dr. Knight, with destruction of the velum and uvula, presents features entirely at variance with the clinical history of the cases of true lupus that have been put on record. It is particularly noticeable in the reported cases that no reparative action has occurred. In his own case there had not been extensive ulceration, but, as has already been stated, there was a superficial erosion, "a worm-eaten appearance," of the epiglottis.

There are unquestionably met with in practice cases of erosion in the pharynx and larynx, occurring in broken-down subjects, chiefly in young people, improvable by tonics and fresh air, and attendant upon what is generally known as a scrofulous diathesis. These cases come very well under the head of the scrofulous lupus of Homolle. True lupus is entirely distinct from these ; it is essentially a neoplastic deposit in the deep layer of the mucosa, this neoplastic tissue subsequently degenerating and breaking down. In his own case this was very evident. In regard to the use of mixed treatment as a means of diagnosis, it is often inconclusive, because not persisted in for a sufficient length of time ; certainly absence of improvement at the end of two weeks would not exclude a diagnosis of syphilis.

To recapitulate : the differential diagnosis lies mainly between lupus and phthisis of the larynx. He would not accept the diagnosis of lupus of the larynx or pharynx, unless accompanied by lupus of the face ; he would exclude all cases of extensive, deep, and destructive ulceration, and also all cases in which there was marked improvement under local treatment, for he regarded lupus of the larynx as incurable.

Dr. KNIGHT, in reply, observed that too much reliance should not be placed upon the records, as the cases that have been reported, which the last speaker would accept as illustrations of genuine lupus, are too few to warrant the exclusion of others which have not exactly the same features. We should be willing still to accept evidence as to the characters of lupus, and not consider the question finally settled.

There was no doubt in the speaker's mind that one of the cases alluded to in his paper was a genuine one of lupus, and the lesions upon the skin confirmed this view ; certainly the manifes-

tations appeared too late to be considered as due to congenital syphilis, and acquired disease was out of the question.

In the first case which he had reported as lupus, the uvula was gone and part of the epiglottis, but in the second case there was loss of substance alone. He believed that there might be very great loss of substance in this disease. Dr. Asch's case proved that there could also be decided improvement. Moreover, cases had been published in which cicatrices have been found, which will be generally acknowledged as evidences of improvement and repair.

Dr. ASCH thought that Dr. Lefferts had taken too broad a ground in his statement that lupus could not exist in the throat without external manifestations; medical literature says that it can. Cases have been reported by Isambert, Bazin, Hamilton, Landrieux, Homolle, and others, where primary disease of the mucous membrane was declared to exist, and the views of these competent observers must be accepted.

He was of the opinion that nearly all of the diseases of the skin may exist on the mucous membranes. The question, after all, is quite independent of any cutaneous manifestation. Is the disease one, *per se*, or is it to be regarded as a scrofulous manifestation? In his own case, he did not wish the Association to understand him as stating that there was great ulceration; he had said that there were slight ulcerations upon the border of the velum palati; there was new formation also, the velum being covered with comparatively large tubercular masses, which were soft, like granulations. Dr. Lefferts did not appear to think that the specific treatment had been given a fair trial, although it was continued for two weeks without benefit; the case afterward improved under topical applications of iron, and cod liver oil internally. The amelioration, under non-specific treatment, he regarded as strong evidence against the syphilitic character of the disorder, as the failure of the specific treatment would be.

Dr. A. H. SMITH, of New York, expressed the opinion that the limiting of lupus to those cases only where there are accompanying external appearances, was taking too restricted a view of the subject. The two factors of the disease, as stated by Dr. Lefferts, *i. e.*, new deposit and progressive destruction of the new tissue, are not incompatible with extensive ulceration, and they would necessarily vary so much at different stages of the disease that their absence can hardly be understood as militating against the diagnosis of lupus in any given case.

# QUARTERLY REPORT AND ABSTRACT OF LARYNGOLOGICAL LITERATURE.

By GEORGE M. LEFFERTS, M.D.

## I.—LARYNX.

1. AMRITO, LALL MOOKERJEE. Sloughy abscess surrounding a necrosed cricoid cartilage. *Indian Med. Gaz.*, Calcutta, 1880, xv, 338.
2. BIEFEL, R. On tuberculous ulcers and erosions of the filtrum ventriculorum of the larynx in consumptives. *Monatssch. für Ohrenheilk.*, No. 2, 1881.
3. COUPARD, G. Polypus of the right vocal cord ; concomitant laryngeal phthisis. Case. *Rev. Mens. de Laryngol.*, Bordeaux, 1880-1.
4. FEUERBACH, A. Rythmic, continual movement of the larynx and tongue, dependent upon the movement of the heart. *Berlin. Klin. Wochenschr.*, Nov. 22, 1880.
5. GANGHOFNER, F. On chronic stenosing inflammation of the laryngeal and tracheal mucous membrane. *Ztschr. für Heilk.*, Prag, 1880, 1, 350.
6. GOUGENHEIM. On the general pathology of the forms of laryngitis. *La France Méd.*, No. 36, 1881.
7. GRUBER, W. Case. Saccus ventricularis extra-laryngeus lateralis dexter. *Virchow's Archiv*, 78, 1.
8. HAYES, R. A. On the action of the posterior crico-arytænoid muscles. *Dublin Four. Med. Sci.*, March 1, 1881.
9. JOAL. On secondary syphilitic laryngitis. *Rev. Mens. de Laryngol.*, Bordeaux, 1880-1, i, 159.
10. KOCH, P. Laryngeal paralysis in a young infant : clinical considerations on the paralyzes of the larynx in children. *Ann. des Mal. de l'Oreille et du Larynx*, March, 1881.
11. LAVENÈRE-LAHONT, A. On the functional troubles caused by chronic tubercular laryngitis, and their anatomical and physiological causes. *Paris*, 1880, 80 pp., 4°, No. 473.
12. LEFFERTS, G. M. Paralysis of the abductor muscles of the glottis. Case. *Am. Four. Med. Sci.*, April, 1881.

13. LEFFERTS, G. M. True cyst of the vocal cord. Case. *N. Y. Med. Record*, March 12, 1881.
  14. LUNDY, C. J. Tubercular laryngitis. *Physician & Surgeon*, Ann Arbor, Mich., 1881.
  15. MASSEI. A comparison between the continuous and Faradaic currents in vocal paralysis. *Ann. des Mal. de l'Oreille et du Larynx*, March, 1881.
  16. MCSHERRY, H. C. Some remarks on growths in the larynx. *Maryland Med. Jour.*, March 15, 1881.
  17. MESSEMER, E. J. Paralysis of the left vocal cord from pressure on the recurrent laryngeal nerve through pleurisy. Case. *Gaillard's Med. Jour.*, N. Y., 1881, xxxi, 127.
  18. NOTHNAGEL. A case of coördinate cramp of the glottis. *Deut. Archiv für Klin. Med.*, Feb. 25, 1881.
  19. ROSENBACH, O. On the etiology of double total paralysis of the n. laryngeus inferior. *Breslau Med. Wochensch.*, Nos. 2, 3, 1880.
  20. SCHROETTER, L. On local anæsthesia of the larynx. *All. Wiener Med. Zeitung*, No. 11, 1881.
  21. SOMMERBRODT. On galvano-caustic operations in the larynx. *Monatssch. für Ohrenheilk.*, No. 2, 1881.
  22. THAON, L. Hysteria of the larynx. *Ann. des Mal. de l'Oreille et du Larynx*, March, 1881.
  23. WHIPHAM and PICK. A case of extirpation of the larynx. *Lancet*, April 2, 1881.
2. **Tuberculous ulcers.** Biefel's excellent work may be regarded as a supplement to those of Heinze and Schottelius. Its chief purpose is to give further details in the matter of the microscopical examination of the tissues in laryngeal tuberculosis, and thus gain a point of departure for laryngoscopic diagnosis, especially in the earlier stages of the disease. He describes in detail two forms of ulcer: 1st, the tuberculous, and 2d, erosions of the *filtrum ventriculorum* in tubercular subjects.
5. **On chronic stenosing inflammation of the laryngeal and tracheal mucous membrane.** Conclusions: There is a disease of the larynx and trachea, leading to thickening of the mucous membrane and consecutive stenosis, which, histologically, is to be classed as the same as the chronic inflammatory process known under the name of rhino-scleroma. The laryngo-tracheal stenosis presents the same clinical picture as the disease formerly described as *chorditis vocalis inferior hypertrophica*, and more recently as *laryngitis chronica subchordalis*, or *subglottica*. The disease, scleroma of the larynx and the trachea appears concomitantly with rhino-scleroma (5 cases in 15); it can, however, develop in a patient without any change of the nasal organ due to rhino-scleroma. The attempt to prove the syphilitic nature of the affection fails, both in rhino-scleroma and in the so-called *chorditis vocalis inf. hypertrophica*. Mercury and potash are both valueless.
6. **General pathology of the forms of laryngitis.** Gougenheim considers the subject briefly, dealing first with the signs, both subjective and objective, such as phonation, respiration, cough, expectoration, and the like, and the color

and form. The relation of the affections, with acute and chronic diseases, follows and here are detailed the laryngeal effects of measles, small-pox, scarlatina, diphtheria, and typhoid, while the influence of diseases of the heart, kidneys, and of the nervous system, in producing laryngeal disturbances, is not forgotten ; as well as that of the cancerous and tuberculous diathesis, syphilis, lepra, scrofula, and alcoholism. The term polypous diathesis we find to be new. The remarks on the herpetic and arthritic diatheses and their relations with laryngeal disease are interesting and timely. The question of treatment presents nothing new.

8. **Action of the posterior crico-arytænoid muscles.** Rühlmann has shown that this muscle may be regarded as consisting of two parts : an outer thin and broad portion, the fibres of which run in an almost vertical direction ; and an inner thicker portion, whose fibres pass in a direction approaching the horizontal, at its innermost border. In accordance with this anatomical division of the muscle, they have been described as possessing a double function : the outer thin portion acting in a vertical direction, and thus causing the arytænoid cartilages to glide laterally from within outward over the articulating surfaces of the cricoid ; the inner thicker and more horizontal portion acting on the outer angle of the arytænoid draws it inward, and thus rotates the processus vocalis outward. The movements of the arytænoïds during quiet inspiration do not show any rotation, the glottis appearing quite triangular in shape, the base being shorter or longer as the cartilages approach or recede from each other ; and that the outward rotation of the vocal processes only becomes apparent during a deep inspiration, when the glottis assumes its fully expanded pentagonal form. The consideration of the function of the arytænoïdeus proprius furnishes further evidence that the action of the posterior crico-arytænoïds is not confined to that of rotation. It is universally admitted that the arytænoïdeus draws together the arytænoid cartilages. In doing so it clearly does not act as the inward rotator of the cartilages, this being the special function of the lateral crico-arytænoïds, and its position rendering such an action impossible, it must then approximate the cartilages previously drawn asunder by the outer fibres of the posterior crico-arytænoïds.

Hayes regards the outer portions of the abductors as coming under the head of muscles of ordinary inspiration ; while the inner portions, which only come into play and act as external rotators of the cartilages during deep inspiration, might be included amongst the muscles of extraordinary inspiration, since, by means of the combined actions of both portions of the muscles, the area of the rima is accommodated to the varying volumes of air passing through it at different periods of time to satisfy the demands of quiet or labored respiration. In conclusion, the action of the posterior crico-arytænoïds is defined as follows : Firstly, a limited but still distinct drawing of the arytænoid cartilages laterally outward from the middle line ; and secondly, the arytænoïds being held in that position, an outward rotation of the vocal processes in order that the glottis may be fully dilated.

16. **Remarks on growths in the larynx.** McSherry says that his paper was hastily written ; in this we agree with him. His account of two ordinary cases of laryngeal neoplasm, nature not stated, and of one, which he classes as a growth, but remarks was one of tubercular laryngitis, though his drawing gives no evidence of it, contains nothing that is new.

20. **A contribution to local anæsthesia of the larynx.** Schroetter, in a very interesting article, tells us that the internal or external use of bromide of potash for the purpose of causing anæsthesia of the larynx is useless. The same is true of pencillings with tannin, swallowing of ice, and the use of Richardson's spray of ether externally over the larynx or over the point of entrance of the superior laryngeal nerve into the organ. Rossbach's method of a subcutaneous injection of morphine over the same point has not been found effectual. Schroetter's own method—a modification of that of Türck—is then detailed as follows: The patient's larynx is pencilled energetically at 7 in the evening with chloroform, the process being repeated twelve times, special attention being paid to those points which are specially irritable, usually the epiglottis. This brushing, the most disagreeable part of the process, and causing a painful burning, has for its object the production of hyperæmia, and, hence, ready absorption of the subsequent morphine solution that is used. In one hour, twelve pencillings with this solution follow (morphine, 0.5; aqua distil., 5), the patient after each carefully rinsing out both mouth and pharynx. He is now left for the night, being carefully watched. Usually in the morning at 8, the larynx will be found anæsthetized; if not fully so, the morphine solution may again be used twelve times; an hour later, success will be certain. In the article before us, this process is illustrated in the history of a case of foreign body in the larynx, which it was impossible to remove, on account of spasm and muscular contraction, until the larynx had been fully anæsthetized. For some other points which come up in connection with the case, and which are disposed of in Prof. Schroetter's graphic manner, the reader is referred to the original.

21. **Galvano-caustic operations in the larynx.** Sommerbrodt says that in spite of the fact that the galvano-cautery has for years been recommended, it is but seldom used in the larynx. Cohnheim has shown that all other caustic applications, nitrate of silver, acids, etc., as well as extremes of heat and cold, produce in animals all the characteristics of an acute inflammation. The actual cautery, on the contrary, calls forth absolutely no inflammation in the neighborhood of the point treated by it. This circumstance, added to the fact that the white-heat platinum cautery is absolutely painless in its use in the larynx, certainly seems to recommend it as the best means, and the surest, in laryngosurgery, for the purposes for which it is indicated.

22. **Hysteria of the larynx.** Thaon's excellent article will be found to be a valuable contribution to a subject but little understood or written about. It covers the ground very fully. Hysteria shows a marked predilection for the larynx; it is met with in various forms, and demands special treatment. The author deals, not so much with the laryngeal disturbances met with in general hysteria, in spinal irritation of hysterical nature, and in hysterical chorea, as with a localized hysteria in the larynx, to the exclusion of all other parts of the body; and, without any other manifestation of the disease.

This special form offers difficulty both to diagnosis and treatment, and should, therefore, be appreciated by the specialist. Cases are frequent. The reason of the special localization is unknown. Thaon gives the causes, as far as they can be determined, and then treats, in detail, of the four varieties of the affection, which he makes, viz.: aphonia, spasm, anæsthesia, and hyperæsthesia.

23. **Extirpation of the larynx.** Dr. Whipham and Mr. Pick commu-

nicated a case of extirpation of the larynx for a growth originally affecting the left ventricular band and vocal cord, which subsequently involved the whole larynx. The patient, a commercial traveller, aged thirty-nine, consulted Dr. Whipham on May 27, 1876, on account of huskiness and a constant desire "to clear the throat," which had come on suddenly and without apparent cause. He had been previously free from all throat affection, and there was no history of syphilis. The man was very nervous, and it was not till June 8th that a view of the larynx was obtained. It was then found that a warty-looking growth, rather larger than a pea, arose from the anterior part of the left ventricular band and vocal cord. After repeated examination and the passage of brushes into the larynx, with a view of preparing the patient for operation, his nervousness was so far under control on July 29th that two small portions were removed by evulsion, with great relief to the huskiness. The case was constantly under observation, but no further operative interference was required until March 3, 1877, when three pieces of the tumor (which microscopically presented for the most part the appearance of papilloma, but in which, at one or two spots, there appeared to be a tendency to the production of epithelial cells) were removed by the forceps. The whole of the warty portion was removed at this time, but the vocal cord was thickened generally; the voice recovered tone to a great extent. Subsequently, however, it was found necessary to apply the forceps to a recurrence of the growth on several occasions—viz., June 16, 1877; January 5, 1878; March 23, 1878; April 19, 1878; December 31, 1878. Early in 1879 the patient had a severe attack of catarrhal laryngitis, and on June 23d, in that year, he complained of having lately suffered from great dyspnœa, with tenderness over the thyroid cartilage, and some external swelling in this situation. He was admitted into St. George's, and in the course of the following six weeks several pieces of the tumor were removed. Again, in October, 1879, a large piece was taken from the larynx. By March, 1880, a great change had occurred in the state of the parts; the growth involved the whole ventricular band and vocal cord; the left ala of the thyroid cartilage was pushed outward, and was tender; dyspnœa being at times urgent. Toward the end of April the dyspnœa threatened suffocation, and Mr. Pick, after examining the patient, performed tracheotomy, from which the recovery was perfect. During the next six months the disease progressed rapidly, the whole larynx being involved by the middle of October, when a large lobulated mass was felt in the position of the left ala of the thyroid cartilage. In the early part of November, 1880, some hæmorrhage occurred through the tube, and at the end of the year he was readmitted into hospital with a view to the performance of some operation. Shortly after his readmission this hæmorrhage recurred rather freely. After consultation with his colleagues on the previous day, Mr. Pick proceeded to extirpate the larynx. Having introduced a tampon canula, Mr. Pick made an incision on January 16, 1881, two and a half inches in length, in the median line of the neck, and a second incision at right angles to it across the middle of the thyroid cartilage. On reflecting the skin the growth was found to involve the left ala of the cartilage. The thyroid cartilage was then divided vertically in the median line, and the two halves separated, when the whole larynx was found occluded by the growth. The left ala was removed, and, subsequently, the right also. The cricoid and the remains of the arytenoids were then freed from their attachments, and removed; and, finally, the epiglottis, which was involved in the

disease, was cut away. The wound was carefully explored, and all traces of the growth, as far as possible, were removed. No vessel required ligature. The operation occupied three-quarters of an hour, and the patient was not much exhausted at its close. The wound was plugged with sponges. Slight hæmorrhage occurred after the operation, which was arrested by the introduction of an additional sponge. Nutrient enemata were ordered every four hours, and for the first two days the patient's progress was satisfactory. On the third day, however, his temperature rose to 103.2° F., and his skin became dry; his pulse ran up to 142. On the fourth day he complained of severe pain about the ensiform cartilage; his expression became anxious. Rapid exhaustion set in, and he died on the morning of the fifth day after the operation. At the autopsy, right pleurisy and pericarditis, presumably pyæmic, were the chief lesions found.

## II.—PHARYNX, SOFT PALATE, AND TONSILS.

1. BARTHELEMY. Chancre of the anterior pillar of the fauces. *Ann. des Mal. de l'Oreille et du Larynx*, December, 1880.
2. BARTON. Congenital tumor of the pharynx. *Med. Press and Circular*, 1881, n. s. xxxi, 10.
3. BONDET DE LA BERNARDIE. A contribution to the study of tonsillotomy. *Thèse de Paris*, No. 113, 1881.
4. BROWNE, L. On the effect of removal of the uvula on the voice. *Brit. Med. Jour.*, 1880, II, 766.
5. CHASSAGNETTE, L. On tuberculous angina. Paris, 1880, 96 pp., 1 plate, 4°, No. 456.
6. FRÄNKEL, E. On the etiology of the neuroses of sensibility of pharynx and larynx. *Breslau. Med. Wochensch.*, No. 16, 1880.
7. FROELICH, L. On tonsillar polypi and tumors of the soft palate. Göttingen, 1880, 8°.
8. GUELLIOT, O. Epithelioma of the pharynx, etc. Case. *Progrès Méd.*, 1880, viii, 1,017.
9. HEATH, C. Clinical lecture on sore throat. *Brit. Med. Jour.*, February 19, 1881.
10. HERVIER, M. On tonsillotomy in sporadic pharyngo-tonsillar diphtheritis. *Lyon Méd.*, No. 6, 1881.
11. KORMANN, E. A case of gangrenous pharyngitis. Cure. *Jahrb. für Kinderheilk.*, 1880-1, n. F. xvi, 172.
12. LABUS, C. On the influence of relaxation of the uvula on the voice. *Lond. Med. Record*, January 15, 1881.
13. LIDEN. A case of tying of the left common carotid after tonsillotomy. *Lond. Med. Record*, January 15, 1881.
14. MCCLELLAN, E. Notes on a house epidemic of "false diphtheria," or "spreading quinsey," originating in local causes, etc. *N. Y. Med. Record*, February 5, 1881.
15. MOSLER, F. On the treatment of chronic nasal and pharyngeal catarrh

by gargling forward from the naso-pharyngeal space. (*sic.*) *Deutsch. Med. Wochensch.*, No. 1, 1881.

16. PENROSE, R. A. F. Chronic tonsillitis. *N. Y. Med. Gaz.*, March 5, 1881.

17. REUSS, L. M. On tonsillotomy. *Jour. de Therap.*, 1880, vii, 806.

18. SCHIRAGIN. On hard chancres of the tonsil. *St. Petersburger Med. Wochensch.*, No. 39, 1880.

19. SHURLY, E. L. A plea for the uvula. *Detroit Lancet*, January, 1881.

20. SPAGNOLO. Obstinate hæmorrhage after partial excision of the uvula. *Lond. Med. Record*, January 15, 1881.

21. STIDHAM, J. S. Chronic pharyngitis accidentally yet successfully treated by a new process of cauterization. *South. Med. Record*, 1880, x, 37.

22. WEIL, C. Large pharyngeal tumor. Extirpation by lateral pharyngotomy. Case. *Zeitsch. für Heilkunde*, March 1, 1881.

23. WEISS. Primitive carcinoma of the pharynx. *Gior. della Acad. di Torino*, August, 1880.

24. WHITE, H. Dermoid tumor of the soft palate. Case. *Lancet*, April 9, 1881.

2. **Tumor of the pharynx.** Barton adds another to the rare cases of dermoid tumor of the pharynx. It was probably congenital; was distinctly covered with skin and hair bulbs; was fatty; and, where the scissors had nipped it across at its base (in removing it), the appearance of cartilage was presented.

4. **Effect of removal of the uvula on the voice.** Browne says that it has long been recognized that removal of the tonsils is followed by extension of upward range in the voice, rather than loss of high notes. As to the removal of a portion of—not excision of the whole of—the uvula, there is much misconception. Singers are not, as a rule, well educated. In the class of cases under consideration, they have often lost notes in their voice, or their entire singing voice, from a chronic laryngitis, largely induced or kept up by an elongated uvula; and because they do not always recover all their voice after removal of the source of irritation, they are too apt to accuse the operation of the failure. Removal of a portion of an unduly elongated uvula is a slight operation of such very great value in a large number of really distressing throat affections, that it is a pity that it should be subjected to deprecation.

9. **Sore throat.** The lecture deals with ordinary cases, and contains nothing new.

12. **The influence of relaxation of the uvula on the voice.** Dr. Labus finds that relaxation of the uvula is a by no means unusual cause of impaired voice, and considers that it deserves a greater degree of attention than it has so far received, and especially because it is often overlooked. Disorder of phonation from this cause is due not so much to elongation of the uvula as to the difficulty which, on account of its relaxed condition, the subject experiences in making various necessary movements of the soft palate during the formation of different sounds. He has observed that the uvula remains pendant in the

chest-notes, becomes slightly contracted in the mixed voice, and, finally, in the treble notes, becomes entirely straightened, swinging upward and backward so as to take a horizontal position, and to close more or less the naso-pharyngeal cavity.

Believing with Helmholtz that the cavity of the upper throat is a resonator, it follows, in his opinion, that all modifications in the conformations of the pharyngo-naso-buccal cavity must influence the harmonic tones, and consequently the quality and fulness of sound. Nothing is easier to understand than that the uvula, situated as it is at the point of union of these three cavities, when once relaxed, no longer permits them to assume the wished-for conformation.

Singers, suffering from an unduly relaxed uvula, complain that the voice has lost in strength, and become hollow and thin ; of inability to preserve an even coloring during emission of certain notes in the middle and upper registers ; of inability to sing any longer on the open Italian vowel *a* (*ah*), being obliged to substitute the sounds of *e* or *u* (*eh* or *oo*) ; of necessity for "forcing" the voice, which produces falseness, with fatigue and pain (due to exaggerated or supplementary muscular exertions), facial grimaces, and, finally, a vocal *tremolo*, eminently disagreeable to the ear.

The radical cure consists in removal ; a deterioration of the voice never follows.

13. **Tying the left common carotid after tonsillotomy.** Extirpation of the left tonsil had been performed in the usual manner for excessive hypertrophy. The hæmorrhage was not very great after the operation, but it did not cease after gargling with cold water, and became more and more abundant in spite of preventive means. After cauterization with lunar caustic, and application of perchloride of iron, it stopped for an hour, then recommenced, the clots becoming larger and more frequent. There was no arterial bleeding. Bladders of ice laid on the neck, and ice in the mouth, diminished the hæmorrhage for a time ; but afterward it came on afresh and more violently. The patient's strength was failing, the pulse 130, weak, and irregular. Three hours after the tonsillotomy, the common carotid artery was tied with carbolized silk, and immediately afterward the bleeding from the mouth stopped ; patient recovered.

15. **Gargling the naso-pharynx.** In chronic catarrh of the throat, the gargling of the pharynx should be combined with a contraction of the pharyngeal muscles (movement of swallowing), so that a part of the gargle is driven through the nose. This, according to Mosler, is necessary, inasmuch as the majority of throat troubles have their original seat in this region.

16. **Chronic tonsillitis.** The lecture deals mainly with the symptoms and results of hypertrophy of the tonsils in children. The treatment is, in part, certainly unusual. Modify bad hygienic surroundings ; give from  $\frac{1}{12}$  to  $\frac{1}{2}$  a grain of calomel every two hours, until the child has from three to six movements a day. This treatment by calomel is to be continued every two or three days for several weeks ; whole body to be rubbed with hot whiskey every night ; if patient is weak, spirits internally at the same time, one drachm of brandy, three to six times daily ; three to six grains of quinine daily, and from five to ten drops of tincture of chloride of iron, three to four times daily. At the same

time, good nourishment. Locally, nitrate of silver, 60 grains to the ounce, if the inflammation and hypertrophy are considerable. Alum, tincture of iron in glycerine, and potash lozenges if the child is old enough to use them.

The author adds that but very few cases will resist this combined treatment.

19. **The uvula.** Shurly offers a very pathetic and poetical plea for the preservation of the uvula against the attacks of meddling surgeons. Besides its great importance as an aid in the positing of the soft palate, as it were, for the purposes of deglutition, vocalization, etc., it serves as a guide to the drainage of the nasal floor. His anxiety for its preservation has led him into the error of not appreciating the great importance of its removal in certain cases, certainly in more than he believes to be indicated. If his directions were carried out, not only would the operation not be done often enough, but enough of the uvula would not be removed.

20. **Obstinate hæmorrhage after excision of the uvula.** The operation of excising the uvula was performed for obstinate catarrh in the throat on a patient who had suffered much previously with gastric disturbance. The trifling hæmorrhage following the operation was allayed by gargling with cold water, but it came on again four hours after the operation, and was arrested by the application of perchloride of iron. The presence of blood in the fæces the next morning was considered a proof that the hæmorrhage had continued during the night, and perchloride of iron was again applied to the uvula. Bleeding did not return, but the patient died in a few days. He had, previously to and after the removal of the uvula, suffered from severe gastric symptoms, and Dr. Spagnolo does not consider that the death was due to the hæmorrhage.

24. **Dermoid tumor of soft palate.** Dr. White, at the London Pathological Society, showed a specimen of dermoid tumor of the soft palate, from a child three years of age who had some difficulty in swallowing. The uvula was much hypertrophied, and lay in front of the tumor, which apparently sprang from the upper surface of the soft palate. The tumor was two inches in height, and had a wide base; it was freely movable, and was removed by Mr. Morratt Baker. It was found to be soft in consistency, except on one surface, where a plate of cartilage existed. Microscopically it reproduced all the cutaneous structures—epidermis, papillæ, corium, and fat cells, but no elastic fibres. There were also many hairs lodged in the follicles, into each of which a single sebaceous gland opened. The plate of cartilage was invested by a dense layer of fibrous tissue; its matrix was very scanty and fibrillated, the outer layers of the cartilage being composed of nucleated stratified cells. Dr. White referred to a similar growth from the basilar process of the occipital bone, recorded by Dr. Abraham in the *Journal of Anatomy*, vol. xv, and to one on the palate of a new-born child described by Dr. Kidd in 1856. As to the origin of the tumor in the present case it might have grown in connection with the Eustachian tube; but its epiblastic nature was sufficiently accounted for by its occurrence in front of the junction of the hypoblast and epiblast. It might be an instance of "reversion," for in the rabbit there occur in this region four tufts of hair—two above and two below. Mr. Rushton Parker had lately seen a similar dermoid growth removed by Mr. Bickersteth from the pharynx of a child, depending behind the soft palate.

## III.—NARES AND UPPER PHARYNX.

1. BOYCE, C. Obstinate epistaxis dependent on cirrhosis of the liver. *Med. Times & Gaz.*, Jan. 15, 1881.
2. COESFELD-BARMEN. On the Mosler method of gargling the nasopharynx. *Deut. Med. Wochenschr.*, No. 9, 1881.
3. FRÄNKEL, B. On rhinoscopy. *Berlin Klin. Wochenschr.*, No. 3, 1881.
4. GOTTSTEIN. On the various forms of rhinitis and their treatment by the tampon. *Berlin. Klin. Wochenschr.*, No. 4, 1881.
5. HARTMANN, A. On the operation for adenoid growths and hypertrophied pharyngeal tonsil. *Deut. Med. Wochenschr.*, No. 9, 1881. *Abst. Centralblatt für Chir.*, No. 13, 1881.
6. HERING, T. Nasal calculus. Rhinoplasty. Case. *Gaz. lek. Warszawa*, 1881, 2 s., 1, 29.
7. KLEIN, E. Contributions to the minute anatomy of the nasal mucous membrane. *Quar. Jour. Microscopical Science*, No. lxxxix, Jan., 1881.
8. MASON. On a new method of treatment in fracture of the nasal bones. *Lond. Med. Record*, March 15, 1881.
9. MICHAEL, J. On the use of the double knife in the treatment of adenoid vegetations in the naso-pharyngeal space. *Berlin. Klin. Wochenschr.*, No. 5, 1881.
10. MIOT, C. On the diagnosis and treatment of certain forms of epistaxis. *Abeille Méd.*, 1880, xxxvii, 481.
11. NOLL, F. Treatment of naso-pharyngeal polypi by temporary resection of the superior maxilla. *Diss. inaug.*, Tübingen, 1879.
12. PIPINO, W. C. Galvano-cautery in chronic nasal catarrh. *St. Louis Med. & Surg. Jour.*, Jan., 1881.
13. RANSFORD. Exostosis of the antrum. Removal of superior maxilla. Death. Case. *Lancet*, March 12.
14. ROSER. On deviation of the nasal septum. *Berlin. Klin. Wochenschr.*, 1880, xvii, 649.
15. RUBIO, F. Mucous polypi of the nasal fossæ; parenchymatous injections without result. Evulsion. Cure. Case. *Siglo Méd.*, Madrid, 1880, xxvii, 694.
16. SAT, S. A clinical lecture on nasal tumors. *Gjishbun Tokio*, 1880, No. 25, April 23.
17. SEILER, C. Erectile tumor of the anterior nares. *Am. Specialiist*, Phila., 1881, ii, 7.
18. SPEIRS, W. R. Notes of a case in which the principal symptom was a constant and copious discharge of watery fluid from the nose. *Lancet*, March 5, 1881.
19. STORROR, E. Nasal polypi and their treatment. *Pacific Med. & Surg. Jour.*, No. 8, 1881, Jan.
20. THORNWALT. A case of tuberculosis of the nasal mucous membrane. *Deut. Archiv. für Klin. Med.*, Dec. 15, 1880.

21. WEIL, C. Rhinolith. Case. *Prag. Med. Wochenschr.*, 1880, v, 441.
22. ZAUFAL, E. On the rhinoscopic picture obtained during a quiet position of the velum. *Archiv für Ohrenheilk.*, 1880, xvi, 273.

2. **On the Mosler method of gargling the naso-pharynx.** Coesfeld controverts Mosler's statements and denies that the operation (see abst. ii. No. 15) is practicable, unless abnormality of the parts exists. The latter authority, however, has the endorsement of Hartmann and Grützner, who assert that it is easy of accomplishment.

3. **Rhinoscopy.** A lecture on the methods and instrumental aids to the performance of this operation; full of useful hints and valuable as the teaching of a well-known authority.

4. **Rhinitis and its treatment by tampons.** In a very excellent article by Gottstein, the following points will be noted: He knows of no remedy that is as efficacious in that form of rhinitis attended by crust formation, for removing these and promoting secretion, as the tampon. In the so-called atrophic rhinitis, besides promoting secretion, it will remove fetor, not, however, when this is dependent upon necrosed bone. To do good in the atrophic form, it must be in contact with the atrophied mucous membrane. He recommends the method (often, however, associated with other local and constitutional means) as employed and described by him in his article (nothing new is here presented), specially in cases where there is crust formation, and to facilitate their removal as well as promote secretion; likewise in cases of defect of the septum, and as the sole means for correcting fetor in the atrophic form of the disease.

5. **Operations on adenoid growths and hypertrophied pharyngeal tonsil.** Hartmann is not satisfied with the existing instruments for the removal of these growths, either through the nose, through Zaufal's speculum, or passed from the pharynx. Those used through the nose are often impracticable, specially in children, on account of lack of room and the discomfort which they cause. Justi's sharp spoon, or the forceps, cause laceration, pain, and bleeding. Hartmann uses, therefore, a wire loop in all cases in which it can be guided by means of the rhinoscopic mirror. In cases where the latter cannot be employed, a special arrangement of the wire ecraseur is used, the wire being hidden within a ring. The ring is pressed up against the roof of the pharynx, so that the growths are pushed within it, and thus crushed off. A special claim made for this instrument is its simplicity and effectiveness.

9. **Treatment of adenoid vegetations.** The instrument figured by Michael, is hardly to be correctly described as a double knife; it is, in reality, a forceps; the long blades well curved, into an almost half circle, and the ends with cutting edges alone. Its method of use does not vary—judging from the author's account—from that laid down by many writers for other instruments of like character.

12. **The galvano-cautery in chronic nasal catarrh.** Dr. Pipino has reported excellent results in the use of the galvano-cautery for chronic nasal catarrh. The cases in which the greatest benefit was derived were those in which there was much structural change and hypertrophy of the mucous membrane over the inferior and middle turbinated bones, causing an obstruction to the free passage of air through the nasal passages. Deflection of the septum to

the right or left should not be mistaken for hypertrophy of the membrane covering it, although we frequently find the membrane covering the posterior part of the septum hypertrophied, as well as that over the turbinated bones; defective hearing, excessive secretion with the formation of crusts, and follicular degeneration of the membrane of the posterior nares and pharynx, are also found. Nothing short of the partial or total destruction of the hypertrophied tissues will answer. The cicatricial contraction of the tissues from the heated wires deprives them of their erectile nature, removes the obstruction, and allows the free passage of air through the nose.

19. **Nasal polypi.** After a few introductory remarks on the subject in general, the histories of three cases are given, in which the growth was removed by means of the Jarvis wire snare.

#### IV.—TRACHEA.

1. BEGER, A. Tracheal stenosis, from abscess of cervical region. *Deutsch. Zeitsch. für Chir.*, 1880, xiii, 558.
2. BENSCH. A case of paralytic dilatation of the trachea. *Lond. Med. Record*, January 15, 1880.
3. CHAUFFARD, A. Lateral contraction of the trachea, consecutive to an old tracheotomy. Case. *Trans. Soc. Anat. de Paris*, December, 1879.
4. FOULIS, D. Some points in tracheotomy. *Glasgow Med. Jour.*, February, 1881.
5. GOLDING-BIRD, C. H. The mechanical treatment of croupous membrane after tracheotomy. *Lancet*, March 12, 1881.
6. KOERTE. Report of cases of tracheotomy for diphtheria in children, tumors of the larynx and stenosis of the larynx and trachea, occurring in the surgical department of the Bethanien Hospital, Berlin, during 1878. *Archiv für Klin. Chir.*, Bd. xxv, h. 4, 1880.
7. MYNTER, H. Stricture of the trachea. Case. *Buffalo Med. and Surg. Jour.*, February, 1881.
8. PETEL. A polypoid vegetation springing from an old cicatrix after tracheotomy. *Trans. Soc. Anat. de Paris*, October, 1879.
9. PILCHER, L. S. The anatomy of the anterior median region of the neck, with special reference to the operation of tracheotomy in children. *Ann. of Anat. and Surg.*, Brooklyn, April, 1881.
10. SCHRÖTTER, L. On tracheal stenosis. *Monatssch. für Ohrenheilk.*, No. 12, 1880.
11. ST. GERMAIN. Tracheotomy in one movement. *Gaz. de Hôp.*, January 15, 1881.
12. SYMINGTON, J. On the anatomical relations of the trachea in the child. *Edinburgh Med. Jour.*, April, 1881.
13. TRADER, J. W. Bronchotomy and its after-treatment. *St. Louis Med. and Surg. Jour.*, February, 1881.

#### FOREIGN BODIES.

1. TODD. Pin lodged in the larynx, removed after four months. *St. Louis Cour. of Med.*, Feb., 1881.

2. **A case of paralytic dilatation of the trachea.** A man, 57 years old, had for three-and-a-half months suffered with cough, hoarseness, and shortness of breath. Suddenly he experienced a difficulty in swallowing fluids, and, at the same time, a swelling appeared in the neck, and the dyspnœa increased. The swelling, on long speaking, coughing, or pressing the abdomen, projected forward, and became of the size of a fist. It was of an irregular shape, tympanitic on percussion, and gave an impulse on coughing. On palpation, when the head was extended, and during quiet respiration, the tumor disappeared, and only a soft elastic cylindrical swelling could be then felt to the right of the trachea. The trachea deviated considerably to the left side, so that only a small portion of its segment could be felt in the jugulum, whilst its left edge lay under the anterior border of the sterno-mastoid. No opening in the air-tube could be detected. With the exception of some bronchitis, the chest was normal. On laryngoscopic examination, paralysis of the right vocal cord was discovered. Dr. Bensch concluded that the swelling, which was evidently not connected with the lungs or the jugular vein, nor due to an escape of air into the cellular tissue, was the result of paralysis and dilatation of the right half of the posterior wall of the trachea. He believes that the trachea, in common with the right half of the larynx, having become paralysed, yielded to the violent expiratory efforts caused by the bronchitis and the paralysis of the vocal cord. The cause of the paralysis he thinks a matter of conjecture.

4. **Some points in tracheotomy.** Foulis' article is a good practical one; it covers much the same ground as his paper: "Notes on Tracheotomy," published in these ARCHIVES (see vol. i, p. 316), the same cuts, etc., being used. His remarks, especially on the size of the tube to be used at different ages, are important.

6. **Cases of tracheotomy for diphtheria in children, tumors of the larynx, and stenosis of the larynx and trachea.** Dr. Koerte reports that no fewer than 149 tracheotomies for diphtheria (membranous croup) were performed in the Bethanien Hospital during the epidemic of diphtheria in Berlin in the year 1878. Of these, 34 recovered and 115 died. In the latter months of the year the epidemic increased, not only in extent, but in malignancy, so that against 56 tracheotomies with 30.3 per cent. recoveries in the first half of the year, there were 93 tracheotomies with only 18.2 per cent. recoveries in the second half of the year. The epidemic was at its height in October, November, and December; and of 62 children tracheotomized during that time, only 12 per cent recovered. The patients were generally admitted at an advanced stage of the disease. In many, the diphtheritic affection had extended from the throat to the nasal passages; in such cases the prognosis was most unfavorable. Many cases were associated with measles, or with scarlet fever, and were then especially liable to terminate fatally. The greatest mortality occurred in children under 3 years of age. In the first year of life no operation was performed; but in the second year there were 29 cases with 3 recoveries, and in the third year, 27 cases also with 3 recoveries. The percentage of recoveries increased with the age and capacity of resistance of the children. Dr. Koerte regards croup and diphtheria as different degrees of the same affection; and considers that they cannot be distinguished clinically, although they present certain pathological differences, the nature of which, however, he does not state.

9. **Anatomy of the anterior median region of the neck.** Dr. Pilcher's article, thoroughly illustrated with new and original drawings, is a most valuable and suggestive one. Having special reference to the difficult operation of tracheotomy in children, it will be read with interest. It constitutes an important addition to our literature of this special subject.

10. **Tracheal stenosis.** As regards causation, the stenosis may be divided into three great groups: 1. That due to pressure from without; 2. due to disease of the tracheal walls; and 3. through disease of the neighboring parts. Under the first class comes swelling of the thyroid gland, aneurism, and mediastinal tumors. Different inflammatory processes in the tracheal walls give rise to the second class of cases. A simple idiopathic inflammation is very rare; that caused by the presence of foreign bodies is not unusual. Granulation tumors and cicatricial contraction following the prolonged sojourn of a tracheotomy tube in the trachea, and leading to stenosis, have been reported. Schroetter has seen no such case, but has observed ulcers of the tracheal walls in tubercular patients, due to the presence of the tube and to the *decubitus*; these, however, never lead to stenosis.

A special form of chronic inflammation has been described by Störck; it can cause a high degree of stenosis (chronic blennorrhœa). Finally, lepra, diphtheritic cicatrices, and syphilis, are efficient causes of stenosis. Neoplasms in the trachea are very rare; connective tissue tumors (fibro-cellular) and papillomas are met with. Epithelial cancer is the commonest form.

In the third class of stenosis, cancer of the œsophagus plays the principal rôle in causation; tumors and glandular enlargement in the mediastinum are much rarer causes.

Regarding the character or shape of the compression, there is great variation; it may be unilateral or bilateral; the size of the tube will vary much, a general-progressive inward protrusion of the tracheal walls, at some one point, is more usual than a sharply-defined inward depression. In chronic inflammation, the commonest form of change is in the shape of an antero-posterior narrow slit. In chronic blennorrhœa, and in syphilis, the opening varies, assuming all shapes. A membranous diaphragm is not unusual.

Therapeutics are based upon the nature of the exciting cause of the stenosis. Schroetter speaks doubtfully as to the extirpation of the thyroid gland. One important danger among others that he mentions is, that even after the removal of the compressing gland, the tracheal walls do not recover their normal position, and can only be held apart and in place by a tracheal tube *in situ*. He has, in one case of circumscribed aneurism compressing the trachea, succeeded in injecting into the sac a solution of iron, by means of a syringe passed through the larynx. In syphilis, aside from the constitutional treatment, an attempt may be made to remove the cicatricial bands—either through the larynx, or after the operation of tracheotomy. Finally, the method of dilatation well known under the author's name, in these cases of stricture of the air passages, is alluded to briefly.

11. **Tracheotomy in one movement.** M. de Saint-Germain has performed 227 tracheotomies without a single grave accident due to the operation. He is opposed to the successive incision of the different layers of tissue over the trachea by the slow method. This is his method of procedure: He places the

child on a table, its shoulders resting on a hard cushion, and the head firmly held by an assistant. With his left hand he firmly grasps the larynx, seizing it as if to draw it away from the vertebral column. A straight bistoury with a narrow blade is then plunged into the crico-thyroid membrane, the direction of the cut being guided by looking at the sternum. The depth of the incision is to be about fifteen millimetres. Next, with a sawing, not with a pressing motion, the cricoid cartilage is divided, and similarly two or three rings of cartilage, and, at the same time, the isthmus of the thyroid gland and the skin are cut. In withdrawing the instrument, the incision is prolonged downward for several millimetres, thus making a little canal into the skin, to facilitate the flow of liquids. The edges are now separated by a suitable dilator, and the canula at once inserted. He has never seen serious hemorrhage occur in this operation.

**12. Anatomical relations of the trachea.** The article is, as its name indicates, a purely anatomical one, and relates alone to the trachea of the child. It is based upon the description of the parts and their relations, as seen in a tracing on glass, taken from a frozen antero-posterior section.

#### MISCELLANEOUS.

1. BJORKMAN, E. Rapid death from suffocation, following the entrance of caseous material from degenerated mediastinal glands into the bronchi. *Hygica*, 1878. *Svenska Läk. Sällsk. förh.*, p. 109.

2. BURNETT, C. H. On the sympathy existing between the ear and larynx, etc. *The Specialist and Intelligencer*, Philadelphia, November 1, 1880.

3. COHEN, J. S. An abstract of the literature of diseases of the nose and pharynx, for the period from the issue of the English edition of Ziemssen to date. Supplement to Ziemssen's Cyclopædia. New York: Wm. Wood & Co., 1881.

4. FRANKS, R. Report on pharyngology, rhinology, and laryngology. *Doulin Jour. Med. Science*, April, 1881.

5. FRONSTEIN. Anæsthetic action of benzoate of sodium on the throat. *Vratch Vedamasti*, No. 447, 1880.

6. JAMES, P. On local remedies in diseases of the throat and mouth. *The Specialist*, vol. i, No. 6, 1881.

7. LEFFERTS, G. M. An abstract of laryngological literature for the period from the issue of the English edition of Ziemssen to date. Supplement to Ziemssen's Cyclopædia. New York: Wm. Wood & Co., 1881.

8. MACKENZIE, HUNTER. Cases from the throat department of the Western Infirmary, Glasgow, with remarks. *Lancet*, August 28, 1880.

9. PIENIAZEK. On certain interesting cases in laryngological practice. *Wien. Med. Bl.*, 1881. iv, 7, 41.

10. RAAB, E. On Störck's blennorrhœa of the respiratory mucous membrane. Stuttgart, Enke, 1880.

11. SCHEELE, H. On the symptomatology of large œsophago-tracheal fistulæ. *Deutsch. Med. Wochenschr.*, No. 5, 1881.

12. STÖRCK, C. On the examination of the œsophagus with the laryngeal mirror. *Wiener Med. Wochenschr.*, No. 8, 1881.

13. SPIEZER, E. On injuries to the throat. *All. Wiener Med. Zeitung*, No. 4, 1881.

14. WARD, W. Some remarks about tertiary syphilis of the throat and its treatment. *N. Y. Med. Record*, February 26, 1881.

15. WOAKES, E. The pathogeny and treatment of bronchocele or goitre. *Lancet*, March 19, 1881.

**2. Sympathy between the ear and larynx.** It has long been known and recorded in medical literature, that a peculiar reflex sympathy exists between the ear and the larynx, and the ear and the teeth. These sympathies are always annoying and usually prejudicial to the integrity of the organs implicated. As these reflex phenomena can be made to vanish, if their real cause is detected, it is the purpose of this paper to call attention to, and briefly describe and explain some of the forms more commonly met, and show how these manifestations of disease can be quelled.

For example, it may happen that a phthisical patient, a man forty years old, is found to have suddenly developed a peculiar and very annoying cough. The throat and larynx are examined, but no alteration is found sufficient to account for the new cough. The latter is almost constant, and sounds as though due to a tickling in the throat, and, in fact, the patient thus expresses his feelings. Perhaps opium is given internally, or some soothing spray from the atomizer is employed to give relief; but the cough does not yield. Some hardness of hearing, too, on the patient's part, draws his physician's attention to the ears, and these, when examined with the aural mirror, are found to be impacted with large, dark wax plugs.

A slight pressure on these plugs excites suddenly and afresh the peculiar feeling in the patient's throat, and there ensues a marked so-called "ear cough."

A removal of the wax plugs, by means of warm water and a syringe, not only restores the hearing, but instantly stops the peculiar cough.

What takes place in such cases is this:

The sensitive fibres of the aural branch of the pneumogastric nerve, supplying the external auditory canal, are irritated by the wax plugs, which are purely foreign bodies in such instances. This irritation is reflected along the motor fibres of the superior laryngeal nerve, exciting movements in the larynx, which constitute the act of coughing, as very clearly mapped out by Dr. Edward Woakes, of London. Should such irritation occur in very sensitive ears, vomiting is excited, as in a case recorded by Pechlin, in 1691. The removal of the wax plugs by syringing is, of course, a removal of the irritant of the aural branch of the pneumogastric nerve, by which the cough or the vomiting is cured.

**5. Anæsthetic action of benzoate of sodium on the throat.** Dr. Fronstein recommends to spray the throat with a four-per-cent. solution of benzoate of sodium, when the act of swallowing, from any cause, is painful, and in all cases where we desire to diminish the sensitiveness of the throat. He gives the history of two phthisical patients suffering from tubercular ulcers, who abandoned the use of solid food entirely, and in one of them even the swallowing of liquids (milk) caused great distress. In both cases an entire relief was obtained, but no improvement in the ulcerative process was noticed.

**12. The examination of the œsophagus with the laryngeal mirror.**

The title of this paper is misleading. It is alone the description of a new tube for introduction into the œsophagus, and a few remarks on the method of doing this. The short historical account which the author gives of the various instruments and different attempts of Semeleder and himself, Bevan and Waldenburg, to view the œsophageal walls by means of a suitable tube and light, is interesting. A recent case induced Stoerck to repeat his earlier attempts, and the result is the instrument which he figures in the text. He does not tell us that it has ever been practically used; it may be thus described: An 11 *cm.* long tube, made in sections and jointed upon the sides, so as to be flexible in one direction (much like Durham's canula); this is covered by a soft rubber tube, drawn over it, to protect the soft parts from laceration during introduction. A long handle, attached to the upper part of the tube by a hinge-joint, to facilitate the passage of the latter into the œsophagus; above the tube a small mirror is fastened by a movable joint. To introduce it, an English catheter is first passed through the sectional tube, to its point; through the catheter, a rubber tube, terminating at its end in a hollow ball, which, when blown up, projects beyond the end of both catheter and metal tube, and forms a rounded elastic end to the whole instrument. Both catheter and its contained rubber tube are held compressed by the hand at the handle of the instrument, during the introduction of the metal tube into the œsophagus.

Just so soon as the point of the instrument has passed the narrow space between the cricoid cartilage, posteriorly, and the cervical vertebræ, both catheter and soft tube are withdrawn, the metal tube pushed further down, the mirror at its top arranged at a proper angle, and light from the forehead mirror reflected by means of said mirror, into it.

The instrument here described is certainly an improvement on the old one of Waldenburg; whether or no it has any practical value as a means of diagnosis, remains to be seen.

**14. Tertiary syphilis of the throat.** Dr. Ward reports, in considerable detail, the histories of four cases of the affection: Nos. 3 and 4 not being unusual ones, and Case 2, of syphilitic glossitis, being of interest; Case 1 offers some question as to the correctness of the diagnosis; all of them, according to the author, "form beautiful exemplifications of the wonderful efficacy of iodide of potash in tertiary syphilitic manifestations of the throat."

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## MISCELLANY.

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### LARYNGOLOGY AT THE COMING INTERNATIONAL MEDICAL CONGRESS.

As announced in these ARCHIVES, p. 195, an International Medical Congress will be held in London, from August 2 to August 9, 1881. We have published an abstract of the rules, as well as the names of the officers and the expected programme of proceedings of the sub-section of Laryngology, which is the only *sub-section* made. Whatever the motives were—those that we have un-

officially heard are too petty and mean for belief—which actuated the managers of the meeting in denying to “Diseases of the Throat” the position in the Congress which they accorded to “Diseases of Children,” “Mental Diseases,” “Ophthalmology,” “Diseases of the Ear,” “Diseases of the Skin,” “Diseases of the Teeth,” etc., viz., the position of an independent section, we hope that before the adjournment of the Congress they will regret their action *and say so*. These ARCHIVES will publish a report of the proceedings:

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#### AMERICAN LARYNGOLOGICAL ASSOCIATION.

The Third Annual Meeting of the AMERICAN LARYNGOLOGICAL ASSOCIATION took place in Philadelphia on May 9, 10, and 11, 1881, Dr. J. Solis Cohen, of Philadelphia, presiding. The President's address and some of the papers and discussions are contained in this issue of these ARCHIVES, the remainder will be published in future numbers. Dr. F. I. Knight, of Boston, was elected President for the ensuing year, and Niagara Falls was selected as the place of meeting in 1882.

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#### AMERICAN MEDICAL ASSOCIATION.

##### SECTION OF OPHTHALMOLOGY, OTOLGY, AND LARYNGOLOGY.

This Section met during the Annual Session of the Association held in Richmond, Va., May 3, 4, 5, and 6, 1881, Dr. D. S. Reynolds, of Kentucky, Chairman, and Dr. S. M. Burnett, District of Columbia, Secretary. The laryngological papers presented were as follows: Nasal Catarrh with Hypertrophy, by Dr. W. C. Jarvis, New York; Syphilitic Laryngitis, by Dr. Carl Seiler, Pennsylvania; Treatment of Nasal Polypi, by Dr. D. S. Reynolds, Kentucky, the last read by title only. Dr. Reynolds delivered the address of Chairman in General Meeting. Dr. D. B. St. John Roosa, New York, was elected Chairman of the Section for 1882, and Dr. J. Solis Cohen, Pennsylvania, Secretary.

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The NEW YORK LARYNGOLOGICAL SOCIETY will not meet again until October. Date and place of meeting will be published in next number of these ARCHIVES.

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The next meeting of the PHILADELPHIA LARYNGOLOGICAL SOCIETY will be held at the house of Dr. CHAS. SAJOUS, 1010 Walnut Street, on Friday evening, September 23d.

Dr. SAJOUS will read a paper, the subject of which has not yet been announced.

C. SEILER, *Secretary*.

## ARCHIVES OF LARYNGOLOGY.

## NEUROSES OF THE THROAT.\*

BY ANDREW H. SMITH, M. D.,

NEW YORK.

I DO not propose, in this paper, to touch upon all the different forms of derangement of nervous action which may occur in the throat, but merely to refer to two or three, the nature of which is not always clear at first sight, and the phenomena of which, perhaps, may not be rightly interpreted.

*Neuralgia.*—It is not very uncommon to meet with a patient who complains of a “sore throat,” which has lasted for a considerable time, perhaps months or even years; which is somewhat intermittent, or at least remittent; which is at no time *very* distressing, but which gives a certain amount of almost constant discomfort, while, under special circumstances, it becomes aggravated. There will be, nearly all the time, a more or less severe aching pain; while muscular movement, as in speaking or swallowing, develops a decided soreness.

Examination of the throat shows nothing abnormal, or, at most, a slight degree of venous congestion entirely inadequate to account for the symptoms complained of. Inquiry elicits the fact that the difficulty is greatly aggravated by fatigue, long fasting, the menstrual period, etc. Generally, the patient will tell you that a great many applications have been made to the throat, some of which seemed, for a time, to do good, but that in the end nothing had been accomplished by their use. Now if a case like this be treated, as a catarrhal sore throat, with astringents or nitrate of silver,

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\* Read before the American Laryngological Association, session 1881.

very little if any benefit will result. Possibly the slight venous congestion, if any exist, may be removed, and the parts presenting a healthy appearance, the practitioner will be puzzled to account for the continuance of the symptoms. But if the neuralgic element be recognized and such remedies applied as are suitable for neuralgia elsewhere, the case will be found to present no special difficulty. Quinine, arsenic, and iron will probably suffice for a cure, without any local applications whatever.

The following case will serve as a type of this class :

Miss W., of Boston, aged 23, was referred to me, some years ago, by the family physician of friends whom she was visiting in this city. For more than three years she had suffered from an aching pain in the throat, shooting at times up into the ears. There was some pain in swallowing, and continuous speaking, even for a short time, caused an intensely tired feeling in the throat. She had had a very fine and very powerful voice, and had sung in a choir, but had been forced to give up singing entirely. She had had a great deal of local treatment in this country, and had spent two years travelling in the south of Europe, with a view to getting rid of her "sore throat." But none of the means employed resulted in any material improvement, and she had returned home quite discouraged.

I found, on examination, a slight passive hyperæmia of the fauces, for which I used astringent applications. An improvement of the local condition followed, but the subjective symptoms remained the same. Faradization was then tried, but without benefit. By this time I became alive to the neurotic element in the case, and began with full doses of quinine. Almost immediately a decided improvement was noticed, and within three weeks the patient returned to Boston completely relieved. I heard from her some weeks after, and there had been no relapse up to that time.

Since then a number of similar cases have come under my observation. They have nearly always occurred in persons whose health was not robust ; in short, in the class of patients who are generally predisposed to neuralgia.

This fact, in connection with the disproportion between the subjective symptoms and the apparent local changes,

has enabled me to appreciate the true nature of the case. It is to be borne in mind, however, that where a neuralgic tendency exists, a catarrhal condition of the mucous membrane will sometimes act as an excitant and tend to keep up the irritability of the nerves. In these cases local treatment will be required in aid of the general measures employed.

This condition, however, is exceedingly difficult to treat satisfactorily among the poorer classes. The bad hygienic surroundings with which one has to contend make it very difficult to lift the patient into that plane of health in which recovery from the neuralgic habit is to be hoped for. If, however, the patient be removed to a well-ventilated and not over-crowded hospital, where he can have rest and an abundance of good food, the complaint will, as a rule, readily yield to treatment.

#### *Deceptive Sensations in the Throat.*

These assume a great variety of forms, the most common being that of a "fulness in the throat."

Patients will aver that the pharynx is occupied by a swelling of some sort, which encroaches upon the passage, and gets in the way when they try to swallow. Yet, when questioned as to whether the bolus of food is actually arrested, or even retarded by the obstruction, they will admit that it is not, but that there is merely a sensation as if it were about to be. In other cases, the feeling is as of a hand grasping the throat. Others still complain of a string across the throat, or of something pressing back upon the posterior wall of the pharynx. Now, in all these cases, inspection and palpation will probably reveal nothing abnormal. Yet, it will be almost impossible to convince the patient that there is not something in the throat that ought not to be there; and he will probably have formed the habit of feeling with the finger to ascertain what is the matter. In one instance in my practice, a woman had acquired the power of exploring her throat with her finger to almost any extent without exciting reflex action. Finally, her diligence was rewarded by finding the arytenoid cartilages, which her

imagination at once converted into cancerous growths. All attempts to reassure her were useless, until I placed before her a model of the throat and pointed out the natural protuberances which she had felt.

The following case will illustrate one form of this difficulty:

Mrs. S——, aged 55, was seen by me in consultation about two years ago. She was a thin woman of a nervous habit, and six months before had suffered greatly from a prolonged attack of inflammation of the middle ear. During the summer following she had very little appetite and lost flesh notably, especially about the neck and throat. For the past month she had been complaining of a sense of fulness in the throat, and of something pressing backward and lessening the space in the pharynx. There was also a sensation as of something pulling up in the throat toward the ear. She fancies, too, that she can perceive externally an increase of the size of the larynx and trachea. A thorough examination of the throat showed a perfectly natural appearance both within and without. The supposed enlargement of the larynx and trachea was evidently due to loss of adipose tissue from the neighboring parts, giving greater prominence to the pomum Adami and to the windpipe, both of which were perfectly normal in form, and did not exhibit tenderness on pressure.

In carefully considering this case it seemed to me that the phenomena might be explained by assuming that there was a slight paresis of some of the muscles of the throat, leaving others without sufficient antagonism. The position of the hyoid bone, and, consequently, of the base of the tongue and of the larynx, which are attached to it, depends upon the action of several groups of muscles. Among these, the mylo-hyoid, the genio-hyo-glossus, and the genio-hyoid, together with the anterior belly of the digastric, tend to pull the hyoid bone forward, away from the spinal column, while the stylo-glossus, the stylo-hyoid, the middle and inferior constrictors, and the posterior belly of the digastric, draw it backward.

Now, if the first-named muscles are from any cause weakened in their action, the second group remaining in full force, the result will necessarily be that the

hyoid bone, and the structures connected with it, will be approximated to the vertebral column, and a sense of something pressing backward will be felt. The direction of the stylo-hyoid is upward and backward, and its action, if not sufficiently antagonized, would give rise to the feeling of something pulling upward toward the ear. Now, it happens in confirmation of this view, that the nervous supply of these two sets of muscles is from entirely different sources.

If we except the genio-hyo-glossus, the lower fibres of which tend to draw the hyoid bone forward, and which is supplied by the hypoglossal nerve, all the muscles having this action are supplied by branches of the fifth. On the other hand, the antagonizing muscles are supplied by the facial and glosso-pharyngeal, except the stylo-glossus, which is supplied by the hypoglossal. Even the digastric muscle, the two bellies of which act in opposite directions, shares in this arrangement, the anterior belly being supplied from the fifth nerve, while the posterior belly derives its supply from the facial and glosso-pharyngeal.

This difference in the nerve supply would render it very easy for one group of muscles to be affected without the other, and a very slight paresis of the anterior group would be sufficient to cause the sense of pressure backward. Paresis of separate muscles would cause modifications of this sensation, such as the feeling as of a string pulling in one direction or another.

The pathological condition lying back of this and giving rise to the paresis might be very different in different cases. It might be reflex in its character, and have its seat in some distant organ, as the stomach or uterus. Carious teeth, hypertrophied and diseased tonsils, chronic naso-pharyngeal catarrh, irritation in the ear, are well-known sources of reflex cough, and might very well be the exciting cause of the condition in question. But in other cases the cause might entirely elude our search, and we should then have to treat the case as a neurosis on general principles.

In the case which I have narrated, I advised the use of strychnine and the passing of the faradic current through

the floor of the mouth, thus acting upon all the muscles which draw the os hyoides forward. Under this treatment, combined with the use of tonics, complete relief was obtained.

Another form of neurosis is a sense of tickling in the throat, which is often the source of very obstinate cough. It is true that in many cases tickling of the throat is dependent upon hyperæmia of the mucous membrane or elongation of the uvula, but in other cases the most careful examination fails to show any local morbid condition whatever, and they must, therefore, be regarded as of neurotic origin.

Reflex irritation probably often lies at the bottom of such cases, arising, perhaps, in some part more or less distant. In one instance in my practice, a catarrhal condition of the external auditory meatus gave rise to a distressing tickling or prickling in the corresponding side of the larynx, which provoked a dry double cough, repeated every thirty or forty seconds. Appropriate treatment to the ear gave immediate relief to the tickling and the cough.

In my own person, irritation of the posterior wall of the right auditory meatus is immediately felt in the larynx, and induces cough. The same is true of the left ear, but in a much less degree.

I have observed this tickling as a very annoying and persistent condition in the early stage of phthisis, and confined to the side of the throat which corresponded to the affected lung. I am not sure whether this is an indication of the beginning of the pathological process which later on shows itself as phthisical laryngitis, and which has often at the outset the same unilateral character, or whether it is merely another manifestation of the mysterious nervous influence which, in other cases, causes the flushed cheek on the same side as the tuberculous lung.

In these cases of tickling which I have assumed to be neurotic in character, astringents are of no value whatever, and demulcents fail to give more than a momentary relief. The only immediate relief is obtained by the use of sedatives in frequently-repeated small doses. Permanent relief,

in cases not connected with phthisis, is pretty sure to follow a few days' change of air, owing, probably, to its tonic influence.

When this cannot be had the use of tonic remedies will be of service. Of course, any source of reflex irritation which may be discovered should be removed, if possible.

## THE LARYNGEAL AFFECTIONS OF PULMONARY PHTHISIS.\*

By BEVERLEY ROBINSON, M.D.,

NEW YORK.

TWO opinions, it appears to me, in regard to laryngeal disease as a complication, or intercurrent affection of pulmonary phthisis, prevail amongst general practitioners of medicine: the first is that this disease is generally the same; the second, that it is usually, if not always, incurable. There are other erroneous notions of minor importance which we encounter even in the writings of professed specialists in throat affections, and to which I shall direct attention as I proceed. The objects of this paper are: first, to mention the varieties of laryngeal difficulty I have encountered in the care of phthisical patients; second, to describe some of the symptoms and pathology of each of these somewhat in detail; third, to point out a few signs of differential diagnosis and prognosis; and, finally, to dwell upon certain indications of a rational and judicious treatment.

Dysphonia, or aphonia, in pulmonary consumption, in so far as it may depend upon interference with the integrity of the vocal function will be explained by: 1, a purely functional affection of the vocal cords; 2, a catarrhal inflammation of the laryngeal mucous membrane; 3, a degeneration of the intrinsic laryngeal muscles, or an interstitial deposit between the primary muscular fascicles; 4, incomplete or complete paralysis of one or other true vocal cord; 5, ankylosis, or luxation of the crico-arytenoid articulation; 6, infiltration and ulceration of different portions of the intra-

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laryngeal structures, accompanied or not with a papillary development of tissue. In these six categories may be found, in my opinion, the very large majority, if not all of the laryngeal affections, which are encountered in pulmonary phthisis, and which have a more or less direct relationship with the march of disease in the lungs. It may be remarked at once that of these six divisions I hold that at least five are not as a rule connected with any local deposit of tubercle, and that in the sixth category it is unusual in the United States to find it when research is made by a skilled microscopist.

1. *A purely functional affection of the vocal cords.*—It is known and admitted that in patients suffering from pulmonary phthisis at an advanced stage, respiratory power is much diminished. At times this is so great as to prevent sufficient vibration of the lax true cords for the production of ordinary vocal sounds. Hence the voice is reduced to a mere whisper. But there are numerous cases in which dysphonia, or aphonia, will appear rapidly or suddenly, and when the patient, though affected with incipient or even quite advanced pulmonary phthisis, nevertheless enjoys such a degree of relative strength and respiratory power that the explanation just given for notable impairment of vocal function will not prove satisfactory. If the larynx be examined with the small mirror there is no evidence of diseased structure, or action, during normal respiration. If now the patient attempts to phonate, the vocal cords approximate imperfectly and leave between their free margins, even whilst a specially strong vocal effort is being made, an oval space of more or less length and width, and hence a hoarse or feeble sound is produced.

2. *A catarrhal inflammation of the laryngeal mucous membrane.*—In the majority of instances in which the larynx will afterward become the seat of œdematous infiltration and ulceration, or so-called laryngeal phthisis, the mucous membrane of this organ is extremely pale and anæmic. And so striking and special is this pallor, that by its presence alone the actual condition of the lungs may almost be predicted, even before auscultation and percussion of these organs have

been practised. Whilst such instances are frequent, they are not the only ones. The laryngeal membrane may be red, inflamed, somewhat swollen, prior to the debut of other phthisical signs either in this organ or in the lungs. This redness affects more particularly the epiglottis, ary-epiglottic folds, arytenoid cartilages, and inter-arytenoid commissure. Then come the ventricular bands, which are oftentimes much thickened and infiltrated, and thus prevent a proper vibration of the true vocal cords during phonation. The result, therefore, of this condition is more or less hoarseness. Finally the vocal cords are pink, or even deep red in coloration. In these instances questions of differential diagnosis will always arise: *e. g.*, Is this inflammatory condition of the larynx under the dependence of the phthisical condition? Does it mark the incipient stage of future phthisical ulcerative laryngitis? Is it a pure catarrhal inflammation of accidental occurrence? Is it possibly caused or influenced by syphilitic disease in the individual? All of these questions I shall endeavor to solve further on.

3. *A degeneration of the intrinsic laryngeal muscles, or an interstitial deposit between the primary muscular fascicles.*—It has been known for several years past, indeed since Fränkel first published his researches (1875), that in many instances in which dysphonia, or aphonia, was a marked symptom in patients affected with pulmonary phthisis, the intramuscular condition of the intrinsic muscles of the larynx served amply to explain it. In many instances he found the contractile substance, the muscle corpuscles, and the sheaths of the fascicles the seat of degenerative changes, more or less advanced. In some the connective tissue between the primary muscular fascicles was increased in quantity, and the separate fibres had undergone atrophy through compression. Miliary tubercles, though infrequent, have been discovered in the muscles of the larynx by Heinze. Even in these rare instances, however, there appears to be no direct connection between their presence and the other changes which have been mentioned, and evidently have become developed quite independently of them. The former would appear to be the result of nu-

tritive changes going on slowly or rapidly, and which in some phthisical patients affect particularly the intrinsic laryngeal muscles. It would be unsafe to conclude that there is always a special affinity of this kind for the vocal organs, inasmuch as latterly muscular changes, such as extreme friability, degeneration, disappearance of transverse striation, as well as consecutive atrophy, have been found in many other muscles amongst phthisical subjects (Posadsky, *vide London Lancet*, Jan. 22, 1881). The frequency of these alterations in the intercostal muscles and diaphragm is something quite remarkable, especially when we remember how frequently we encounter a low, whispering voice amongst consumptives, quite irrespective of any laryngeal affection and out of proportion with their relative amount of bodily strength. Moreover, according to Posadsky, it appears that "cases with and those without the change presented nearly the same conditions and nearly the same visceral changes." The muscular change in the larynx to which I have directed attention, may follow upon one or more repeated attacks of cold in a phthisical patient, in whom the larynx may on each occasion have been slightly affected, or it may have come on insidiously, by degrees, and without any outward manifestation, or interior physical change apparent in the small mirror. Finally, it is remarked that the voice becomes more easily fatigued, hoarse, or squeaky at times, especially in the afternoon or evening. This vocal fatigue instead of improving with time, or rest, remains either stationary or progresses. In a few rare instances in which I have inferred from the obstinacy of the aphonia under treatment (meaning by this its long duration) that this condition of change had begun, although probably not far advanced, I have finally had reason to believe its march was stopped for a while. At all events the voice has been strengthened, if not perfectly restored, and the patient ceased to claim my professional care.

4. *Incomplete or complete paralysis of one or other true vocal cord.*—This condition, familiar to laryngoscopists as due apparently in the majority of instances to pressure

upon one or other of the recurrent nerves by deposit of cheesy or tubercular material at the apex of the lung, is readily observed when present. There are a few points in regard to it which are the outcome of personal experience.

*a.* The paralysis of the left cord I have seen more than once; paralysis of the right I cannot recall. The cord was in an abducted position, although not as far removed from the median line as if the paralysis of the adductors of the same side were complete. The affected cord was never of normal coloration. There was congestion of the posterior or anterior portion of the cord. Unless there was concomitant catarrhal laryngitis, the central portion of the true cord was not red or inflamed in appearance. The affected cord did not correspond in situation, as a rule, to the lung most involved. Whenever I have seen the left cord paralyzed, I have found the right lung at a more advanced stage of phthisical disease. These affirmations are not wholly in accord with the statements recorded in some text-books which speak of this subject. My observations would even seem contrary to natural inference, since the relations of the left recurrent nerve with the apex of the left lung are not by any means so near as those of the right recurrent with the summit of the right lung. I make bold to affirm that the existence of enlarged glands was likewise more than problematical: 1. because percussion did not reveal them; 2. because symptoms of spasmodic cough, due to irritation under pressure, were not present, such indeed as Barety, Gueneau de Mussy, and other observers have so clearly connected with the enlarged cheesy degeneration of the tracheo-bronchial ganglia.

*b.* One cannot assume in advance either the presence or absence of the paralytic condition of one of the vocal cords by the amount of interference with the normal voice which exists at the time. Several times already I have discovered the condition of paralysis almost by accident, as the patient's voice was so nearly natural that until I examined the larynx with the aid of the mirror I did not believe in the existence of any intralaryngeal affection of much importance. In these cases there was no local pain and

no dysphagia. During phonation the healthy cord simply went beyond its ordinary limit, and so closely approximated the paralyzed cord that the vibration of the margins of both of the cords was rendered possible, and the phonetic sounds produced were not very notably changed. We can at once perceive the very great importance of a laryngeal examination in a diagnostic point of view where such a condition prevails, and where the condition of the lungs themselves is doubtful. In these cases, where the paralysis was situated on the left side, I have now the suspicion that the paralysis was due, not to the pressure of the left recurrent nerve in the chest, but to changes of the intrinsic muscles of the larynx, more particularly, if not wholly, developed on the left side. Analogy with the unequal distribution of changes which have been found in muscles elsewhere situated, and the deduction from the lack of spasmodic symptoms should, to a certain extent, justify this assumption.

5. *Ankylosis, or luxation of the crico-arytenoid articulation.*—Whilst ankylosis and luxation of the crico-arytenoid joints are not a very infrequent result of the ravages of tertiary syphilis, and have also been encountered as a consequence of typhoid fever, gout, carcinoma, and purely mechanical lesions, these conditions are at least doubtful in phthisis. Some authors, indeed, assume their existence, basing their convictions on mere clinical observations (Poyet, Stærk, Kock). Others deny their presence on the ground that the cachexia of phthisis must, of necessity, lead to suppurative degeneration of tissue so soon as the laryngeal perichondrium is involved by infiltration of this origin (Fränkel, Eppinger, Michael, Schottelius). Nowhere, however, is this subject so ably and exhaustively treated as in a pamphlet "On Mechanical Impairments of the Functions of the Crico-Arytenoid Articulation" by Sémon, which is reprinted from the *Medical Times and Gazette* of 1880. In it he states that there is not, in his belief, "a single case of phthisical ankylosis on record." In view of a late paper, however, by Dr. M. Schmidt, of Frankfort-on-Main, "On Laryngeal Phthisis and its Treatment" (*Deutsches Archiv*

*für Klin. Medizin*, vol. xxvi, 1880, page 325, *et seq.*), in which great stress is laid upon the importance of the affections of the crico-arytenoid articulation occurring during this disease, Sémon's opinion appears too exclusive. For my own part, I confess that I cannot recall a single case of laryngeal disease in a phthisical patient in whom I have been able to affirm the existence either of a true ankylosis or luxation of this joint. Almost invariably the patients observed, in whom I might have inferred the existence of one or other of these conditions, have shown such an amount of infiltration of the soft tissues as to explain by mechanical obstacle the impairment of their voice. Hence, I have concluded that to this was chiefly due the imperfect approximation of the vocal cords during the effort of phonation. I cannot subscribe at all to the assertion that the phthisical condition present will render it essential that the infiltration of tissue should have a rapid, inevitable march toward suppuration. Many of these patients present the smooth, œdematous, "club-shaped" arytenoids to the inspection of the specialist during many months, and whilst the accompanying pulmonary affection offers undoubted signs of large cavities, without undergoing suppuration, in the submucous layer. In this statement it will be remarked that I hold an entirely different opinion from Heinze, who does not even mention the possibility of phthisical perichondritis of the laryngeal cartilages without suppuration. That this question merits further study and research is assured, to my mind as to Sémon's.

6. *Infiltration and ulceration of different portions of the intralaryngeal structures, accompanied or not with a papillary development of tissue.*—In this division we find the most usual forms of laryngeal disease in phthisis. The infiltration may implicate one portion of the larynx more than another, and particularly is this true in the earlier stages. At an ultimate period all sections of the larynx become involved. Beginning frequently in extreme pallor of tissue, by and by the mucous membrane and submucous layer are thickened and œdematous. The surface of the membrane is ordinarily smooth and glistening. Upon moderate pres-

sure with the laryngeal probe a considerable amount of resistance is felt, and no permanent impression is left which ocular inspection can detect. At once we have a distinguishing feature of great value between this form of swelling and that which characterizes œdema due to other usual causes. Moreover, the larynx takes certain typical appearances, first most graphically described by Dr. Mackenzie, of London, since that time given by most writers on this subject who aimed at perfect accuracy.

These forms are : 1. The turban-shaped epiglottis ; 2. the club-shaped or pear conformation of the arytenoid cartilages and ary-epiglottic folds. The base of these swellings looks inward and posteriorly, whilst their distal extremities taper outward and forward. There is a third form of disease, which is none the less pathognomonic when recognized. This is the carious form, in which a number of small superficial ulcerations are seen along the vocal cords and ventricular bands. They are at first small and lenticular ; soon they coalesce, are of serpiginous outline, carry their ravages deeper and broader into the tissues beneath, and present an aspect which closely resembles that left by a worm which has slowly but surely undermined neighboring structures. It is a habit amongst writers upon throat affections to describe perichondritis as complicating these different forms. If by this term we would name a thickening of the perichondrium directly occasioned by an increase of the fibrous tissue, which is so important a part of its intimate formation, I unhesitatingly agree with them ; but if we go further, and admit that this first stage is but a commencing stage of what goes on rapidly to form softening and abscess, I here remain in complete disaccord. Perichondritis in laryngeal disease may possibly cause suppuration of the cellular structures, but such result is by no means habitual. Ordinarily the morbid march of laryngeal œdema is to make a certain progress toward suppuration, but too often, fortunately, this tendency is stopped in time, and the disease never gets much beyond the period of infiltration. The instances are rare, indeed, in which the cartilages of the larynx in this disease become either carious or necrosed. Not that we do

not now and then encounter cases where the autopsy shows, by section of the cricoid and thyroid, a marked change in coloration, and perhaps also in density and consistence. But if we look to find the cartilages very notably softened, or separated completely from their fibrous covering, and acting merely as a foreign body in the vocal organ, we shall not have frequent opportunities of examining such cases. In this matter there are, I fear, some theoretical descriptions adhered to in our text-books; but if one has the privileges of extensive clinical opportunity and of frequent visits to the dead-house of a large public hospital, it is found that they are erroneous. The œdematous swelling of soft tissues in this form of affection is important, partly by reason of its amount, partly in view of its location. If very considerable, no matter where it is located in the larynx, it will inevitably cause dyspnœa, more or less intense and painful in character. If moderate in amount, it may not occasion much difficulty of breathing, but will probably cause aphonia or dysphagia.

Whenever the soft tissues covering the arytenoid cartilages are thickened, the posterior portions of the true vocal cords cannot perfectly approximate during vocal effort, and hence they do not vibrate normally. Thus imperfect vocal sounds are produced. In some instances it is due merely to a mass of infiltrated tissue, which prevents complete adduction; in others there is an additional obstacle in the diminished rotatory function of one or other of the crico-arytenoid joints. In such cases the limited area of motion is, I believe, dependent upon stiffening of the articular ligaments, and incipient muscular alteration. In granting this, we have a rational explanation as to why, in patients whose arytenoid cartilages are not much swollen, a wide triangular space is visible during phonation, in the intercartilaginous portion of the glottis. It should be understood that I am alluding here only to cases in which, from the presence and location of œdematous swelling, it is probable that the neighboring joint is to some extent involved. Now then, the ligamentous attachments are the parts affected, not the articular surfaces. The lat-

ter, indeed, are rarely the seat of visible changes. There are but few instances, however, where the thickening of the soft tissues is confined to the region of the arytenoid cartilages. Habitually, the interarytenoid commissure is more or less infiltrated, and in this condition we have another obstacle to the production of normal vocal sounds.

Whenever the epiglottis is particularly involved, we are apt to have a considerable degree of dysphagia. Not only is there a certain difficulty of swallowing, there is likewise more or less pain accompanying the act. If there be ulceration of the epiglottis in any part, either upon the cushion, on the posterior surface elsewhere, or along its free margin, the pain of swallowing is greatly increased. But this is not all, for owing to the imperfect shutting of the upper laryngeal orifice by this valve, food and drink will occasionally or habitually penetrate the larynx or trachea during a meal, and produce the most painful attacks of cough, followed or not by vomiting. The ulcerations of this form of laryngeal affection in phthisis show themselves at different periods. In the carious form of the disease they are essentially the feature of it. Here indeed the œdema is inconsiderable, and the soft tissues are never much swollen or infiltrated. From their position, however, along the false and true cords, whilst they occasion hoarseness and loss of voice, they give rise to slight pain, and no dysphagia. If the ulcerations be situated over the arytenoid, or ary-epiglottic folds, it has never seemed to me that they increased notably the pain of swallowing. They do, however, add to the frequency of the cough, especially if they are numerous, or considerable in extent. In this event they are the source of much muco-purulent material, which, remaining within the larynx, excites cough and expectoration, and no sooner is it expelled than a fresh quantity is produced. As regards the appearances of these ulcerations, I am of opinion with Browne, Grant, and others, that they are clinically distinctive and characteristic. To hold as Heinze does, that the microscope must be the interpreter of their significance, is to my observation unfounded. It is a great mistake, I am satisfied, to permit *post-mortem* examinations to fix our be-

lief with respect to many intralaryngeal conditions occurring during life. The red areola which distinguishes the syphilitic from the tubercular ulcer during life, has almost disappeared in the dead-house before the body is examined, and in the same way the general appearance of the membranous covering of the larynx, and, to a less marked degree, the coloring of the ulcers themselves.

During life, on the contrary, the laryngeal ulcerations in phthisis have characters which, to the inspection of the skilled laryngoscopist, are sufficient to establish their existence. As this belief, though accepted by many specialists, is still combatted by some, I shall describe their main features: The ulceration of the larynx in phthisis, has, at first, a regular, lenticular outline, its configuration becoming irregular and more or less festooned with time, and when several primary ulcers coalesce. It has a gray fundus, never very deep, with an undermined margin. The secretion from it is abundant in proportion to its extent, and is of muco-purulent nature. There is no red areola about it. Never in its ravages does it penetrate the tissues very deeply. All these characters differentiate it with the syphilitic or carcinomatous ulceration. The above is a type: Now, then, there are variations from it. First, and most important, are those instances in which a syphilitic dyscrasia complicates the cachexia peculiar to phthisis. Of course, the appearances of the ulcerations are modified, and at times to such a degree that we are obliged to refer to the general symptoms and the commemorative data in order to seat our diagnosis firmly.

Second, the very few and rare cases in which ulcerations very superficial in character accompany or precede an outgrowth, sometimes benign, sometimes malignant, in nature. These latter cases have at times left me in doubt during several months as to whether the patient had phthisis or not. As time elapsed, fortunately, the different cachectic condition of a patient suffering from a malignant outgrowth in the larynx, the frequent absence of febrile exacerbations, of pulmonary symptoms, and the presence occasionally of enlarged indurated ganglia in different regions of the neck

and elsewhere, have fixed me in my belief, and this leads me to considerations which have their clinical importance, both from a diagnostic and prognostic point of view. There are a certain number of instances of laryngeal disease in phthisical patients in which there will be found, even at an early stage of disease, a papillary outgrowth of tissue. At times this is almost the first objective condition which is observable and which indicates a morbid process in the vocal organ. The warty production may be seated along the false and true cords, but it is extremely frequent relatively in front of the arytenoid cartilages and interarytenoid commissure. This latter is in reality its seat of predilection. At first the warty growth is small, pale, or pinkish in coloration, and resembles so many little promontories or acuminate projections of pyramidal shape, which project into the interior of the larynx. They may spring from the fundus of an ulcer; quite as frequently there is no ulceration either prior to or during their period of duration. After several weeks or months, the likelihood is that the mucous membrane at and about their base becomes visibly thickened. If left to themselves these warty excrescences will augment in size, and tend more and more to occupy the entire surface of the interarytenoid commissure, and attack the soft tissues in front of the arytenoid cartilages, which also become more or less infiltrated. It is more than difficult at times to pronounce certainly whether the intralaryngeal condition just described be a proof of phthisical deposit in the lungs or not. Of course, if we find physical signs of pulmonary phthisis the diagnosis is affirmed. If, indeed, physical signs of lung disease are lacking, and the general symptoms of fever, emaciation, loss of strength, appetite, etc., are markedly developed, we might still consider the intralaryngeal affection confirmative of our probable view of the case.

But if, as I have seen more than one case, both the general symptoms and physical signs give us no positive information, certainly the laryngeal appearances are confusing. The examination of the tissue of such outgrowths under the microscope does not always tend to establish our convic-

tions, inasmuch as they have simply the structure of an ordinary papilloma. The results of treatment, fortunately, however, for the physician, bring useful information with them. If the warty outgrowth be a simple papilloma, we can hope by evulsion and cauterization of the base to rid the patient of it definitively. Not so with the warty excrescences which appear in a phthisical patient. If torn away with the laryngeal forceps they are sure to grow again in a short period of time. Cauterization after evulsion is not seemingly more efficacious, and, in fact, both evulsion and cauterization seem to me to hasten their reappearance, and when they are so situated as not to be completely brought away with the forceps, their tendency to pullulation is much increased. Moreover, unless one be remarkably skilful, the complete evulsion of these growths requires several sittings at least, during which the larynx is apt to become sore and irritable. Doubtless this can be explained by clumsy or repeated efforts to grasp the growth. The conclusion to these considerations is, according to me, to let such growths alone as far as may be by operatory procedure, unless they are of a size and in a situation such that complete ablation is assured in one, or at most a few sittings. If, on the contrary, it be not possible, we should, in my opinion, avoid attempts at evulsion, unless they become so large as to fill the lumen of the larynx to a considerable degree, and thus interfere notably with respiration. In this event, of course, immediate evulsion becomes a matter of necessity. There is one peculiarity about these growths which I have frequently remarked, and that is, the fact of their connection with violent paroxysms of cough. This is true, in my experience, only of those situated at the interarytenoid commissure. I have been able in a few cases to arrest these paroxysms almost completely, for a limited period, by applications of sulphate of copper directly to them. When the warty excrescence was small and the pulmonary condition good, I have more than once felt convinced that I had not only stopped the cough by this means, but also rid the patient completely of the condition causing it. It will be well to keep this in view when I report my conviction as to cer-

tain cases of laryngeal disease being the starting-point in the causation of pulmonary phthisis.

As regards the differential diagnosis of catarrhal laryngitis in a phthisical patient with the inflammatory appearances seen in secondary syphilis, we shall be guided, without question, in many instances, by the previous history of the patient, and also the various symptoms and signs present at the time of examination. Apart, however, from the commemorative and other facts which are revealed to us by rigid questioning, we have certain appearances in the laryngeal mucous membrane, which are said to have much diagnostic value. These are, 1, the COLORATION is of deeper, more nearly purplish hue at times, than is ever seen in closely analogous affections; 2, the *distribution* of the color is not regular and continuous throughout the interior of the larynx, or even upon the vocal cords, but is marked by its patchy appearance, very much like a roseola upon the integument. I do not remember to have seen these appearances so characteristic in themselves as to enable me to affirm the diagnosis, but in a lesser degree, and when combined with notable congestion of the pillars of the fauces, as Mackenzie has remarked, they have made me strongly suspect the nature of the affection, even when the history of the patient was doubtful. Following out the indications by giving the mixed anti-syphilitic treatment, has, then, become the true touchstone of the situation.

To distinguish such cases from purely catarrhal ones is at times very difficult, and there is, in fact, in the local condition, nothing which of itself is at all characteristic.

We are obliged to recur to the previous history of the patient, and to his actual general symptoms, in order to hold a positive opinion in regard to the nature of the intralaryngeal difficulty. Of course the obstinate duration of catarrhal appearances in the vocal organ, in spite of careful and continuous treatment, will make us justly suspicious in regard to an influencing constitutional state. But the more difficulty we have in the successful treatment of this intralaryngeal catarrhal aspect, the more we should insist upon its being carried out effectually. Whatever opinion

one may hold as to the nature of certain forms of intralaryngeal disease in patients affected with pulmonary phthisis, it is certain that the catarrhal form should not be neglected, either when the intrapulmonary condition is *apparently* healthy, or when, on the contrary, it is obviously diseased. It is to me an assured fact that many cases of catarrhal phthisis are no more than the rapid and direct consequence of a neglected and obstinate case of simple catarrhal laryngitis. Even if remedies be employed, the patient may be still a neglected one, because the agents of cure are improperly applied.

An old inflammatory affection of the larynx will not usually get well in our climate solely through internal remedies and hygienic surroundings. Something more is required, and this something is systematic medication by means of topical applications with the laryngeal brush. If these be not made two, three, or more times in the week, other remedial measures will remain abortive, and in search of a cure the patient will be told finally, by his or her family adviser, to go to a warmer and more equable climate. In my observation of the effects of these transmigrations, whilst they are, without question, beneficial, they are not always curative unless local astringents still be applied to the vocal cords. We perceive the wisdom, therefore, of physicians who frequent the sanatoria in the South and West, making themselves familiar with the practical use of the laryngoscope.

In regard to the *nature* of the different forms of intralaryngeal disease treated of in this contribution, I do not consider it necessary to make extended remarks. For all except the last division of my subject, in which is found those forms combining œdema and ulcerations, I hold a very clear and absolute opinion, viz.; that tubercular deposit has very little directly to do in their causation. Of course, as in the catarrhal variety, there may be an underlying cachexia, and this cachexia, whilst it influences and prolongs the existence of the catarrhal laryngitis, is also promoted, and tends to manifest itself, by reason of a tedious and wearing affection which occasions very frequent cough and ex-

pectoration. But that tubercular deposit within the soft tissues of the larynx influences the origin and progress of these forms of disease, that I do not believe. I have also held, in a paper read before the State Medical Society more than two years ago, that the evidence of miliary tubercle being present in the larynx, even when present in other organs, and when the larynx itself was the seat of ulcerative phthisical laryngitis, had not been sufficient, in my experience, to make me admit it. Since that period I have had frequent and renewed opportunities of observation, and whilst I am perhaps less radical in my views than I was at the time referred to, I still believe that tubercular laryngitis is a very rare form of disease, at least in New York City. And yet, on the other hand, we have testimony of the very best kind to its great frequency in all cases in which the larynx is affected in pulmonary phthisis. Such weighty support as the names of Mackenzie, Heinze, and other late foreign writers lend to this belief, is calculated to make me hesitate in adhering to views so much opposed to theirs. And yet I cannot doubt what my own careful investigation shows, any more than I am inclined to throw doubt upon the testimony of eminent observers who are opposed to my hitherto sustained view of phthisical laryngitis of ulcerative form. There are two ways to reconcile these apparent discrepancies. The first is to agree upon the exact definition of what shall be called a tubercular lesion. The second is to recognize the fact that types of diseased action vary in different countries, and that a particular disease may not resemble closely the same affection in another and perhaps distant land.

The first opinion has been more than once suggested in regard to tubercular deposits elsewhere than in the larynx. Whether or not it has been particularly considered with respect to the vocal organ, I am not prepared to state. Certain is it that it would help laryngologists very considerably in their estimate of the frequency of tubercular laryngitis, to have it rigidly fixed as to what are to be generally admitted as sufficient proofs of the existence or non-existence of tubercular laryngitis. These proofs can scarcely be,

for practical purposes, merely based upon pathological investigations under the microscope and in the dead-house, for the reason that practitioners of medicine wish to have signs and symptoms by which they may judge the situation prior to death. Evidently, thus far, there is not an unquestioned adherence by all to any pathognomonic evidence of its existence during life. Opinions differ. I have seen ulcerations in the larynx with concomitant localized œdema pronounced tubercular by some, doubted by others. And the very fact of the cure will not invariably settle the matter, because there would not appear to be any valid reason why even a tubercular ulcerative disease should not be capable of cure in the larynx, since there is tolerably convincing evidence that it has been cured, though infrequently, in other viscera of the body.

As to our second proposition, this much at least can be affirmed: Certain affections commonly recognized as similar, differ very materially in different countries. And I am not speaking now merely of epidemic diseases, which we all know afflict certain localities at different periods with a very profound difference in their virulent manifestations; witness certain classic epidemics of influenza, of diphtheria, small-pox, and scarlatina. Nor do I refer particularly to affections which were formerly considered more or less endemic on account of some peculiarity of soil or climate, or both, and which we now believe to be due to some definite well-ascertained cause which would ordinarily, if not always, be discoverable if our means and opportunities of investigation were more perfect and thorough. In this class I would mention especially, typhoid fever, and certain forms of malarial poisoning. I have in view, and refer particularly in this connection to forms of disease of which lupus is a type, grafted doubtless upon a highly strumous constitution, but caused originally, as phthisis frequently is, by bad physiological conditions and hygienic surroundings.

Now, then, lupus, in my limited observations, is no more the same, in its outward manifestations, when observed in Vienna, Paris, London, and New York, than many affections which in truth have little in common with one

another. Let any one who has visited Hebra's wards in Vienna, Bazin's in Paris, Wilson's or Fox's in London, and the wards of Charity Hospital in New York, reflect a few moments upon what he has witnessed, and I will venture to affirm, dermatologist though I do not profess to be, that between the types of this disease, seen in different places, he will have noticed many salient distinguishing features. This assertion is none the less true of tubercular disease. Tubercular disease is, I believe, more frequent in London and Paris than it is in New York; but, further, my observation would lead me to affirm that it is more *virulent*, so to speak, extends its ravages farther and deeper, and attacks organs abroad quite frequently which in New York at least are left intact, as a rule, in its destructive onward march.

Not only do I base my opinion in making this statement upon what I have seen in the dead-house time and again, but also upon my daily clinical observations. One does not witness *post-mortems* in which miliary tubercle has been deposited to a large extent and in numerous organs in any thing like the same number of cases relatively that one sees them abroad. And certainly, so far as the larynx is concerned, one does not see in our throat clinics nearly so many cases of phthisical ulcerative laryngitis as I remember to have seen in Europe. Our type of pulmonary and laryngeal difficulty is emphatically a catarrhal one. The majority of people, even in the lower strata of society, are relatively well housed, well clothed, and well fed. They have fewer hours to work and more rest during the week, and particularly on Sunday, than the same classes of people in England and on the Continent; and, hence, in my opinion, like efficient causes of the growth of miliary tubercle do not exist, fortunately, to the same degree with us as with them. When, however, one has a catarrhal affection of the throat, the larynx, or the bronchial tubes, one is by so much more in a condition of pathological danger. And nothing is more frequent, according to my later observations, than to witness the effects of repeated and neglected colds, both within the lungs and primarily or secondarily in the larynx itself. In the pulmonary structure such attacks far too

often tend, more or less rapidly, to cheesy pneumonia ; in the larynx, toward so-called laryngeal phthisis, which in reality is often a wasting affection, but one which is essentially catarrhal in type, and should be capable of cure unless it has advanced too far, and beyond the limits which can be influenced favorably by the most rational and best-directed medication, general and topical. It will be understood, therefore, from what precedes, that whilst I am inclined to believe to-day in the existence amongst us of a certain number of rare instances of tubercular disease within the larynx, I hold more and more to the conviction that the great majority of cases of all kinds of laryngeal affection of my sixth division, intercurrent with pulmonary phthisis, are catarrhal in their origin, progress, and intimate nature. Of course, I am free to admit that *miliary tubercle* may be found, and even quite frequently, as a secondary deposit or infiltration in the vicinity and at the base of catarrhal ulcerations of the larynx, in precisely the same way that we recognize it in the lungs about a cheesy nodule in a softened or fluid condition ; but this is a mere consequence of transport or auto-inoculation, and does not in any manner interfere with the soundness of views held by me in the preceding remarks of this paper. The same opinion might be and is held in regard to any purulent focus, and so prevalent is this opinion that, outside of the lungs, if we recognize the existence of tubercle, we are not satisfied until we have searched everywhere and found the original cause of auto-infection.

Now, then, what shall I say of the treatment of these different affections? Are they curable or not?

In reply, I would say this will depend, to a great extent, upon the stage at which they have arrived before treatment is fairly begun. It will depend also very much upon the method according to which treatment is conducted. If the treatment be the time-honored one of the old practitioner, with good hygienic surroundings, rest, nourishing food, moderate exercise in the open air, and cod-liver oil, or the hypophosphites, our hopes will be vain indeed of a permanent cure, or even a temporary arrest of the local manifes-

tations of disease, but if to all this we add a well-directed, methodical, and judicious use of local detergents, astringents, and sedatives, the outlook is perhaps not so dark. Indeed, there are a number of well-recorded cases, which go to show that even phthisical ulcerative laryngitis, though it be at a somewhat advanced stage, may yet be entirely cured. Amongst those who have had gratifying results from local treatment, no one appears to have been so successful as Dr. F. H. Bosworth, of New York City. If we read the carefully recorded histories of Dr. Bosworth, we can but be struck by the very assiduous and careful local treatment which he gives to such patients. He does not merely content himself, as most practitioners do, with the application two or three times a week of some local astringent, such as iron or zinc in solution, to the larynx. He first prepares the way for these applications, by the use of a disinfecting and detergent spray; he then makes his astringent application; and, finally, if there be painful symptoms present, indicative of ulcerations, he makes use of anodyne, or alterative powders locally applied. The successes from Dr. Bosworth's conscientious method of treatment have been very encouraging, and have made me anxious to follow a similar course in like cases. Thus far I have never been gratified by curing an advanced case of ulcerative laryngitis of pulmonary phthisis. What I have been able to accomplish was to retard the progress of advanced cases, and prevent cases at the first stage advancing any further. And herein lies, it seems to me, one of the most important considerations with respect to *local* treatment, viz.: to seek, if not the complete cure of diseased action, at least an arrest of its march. It may be that the disease is kept in abeyance but a short period, a few months, or a few years. But even then the patient will suffer considerably less from cough, expectoration, not to mention localized pain and dysphagia, than if permitted to go on without frequent local applications to the throat.

Those practitioners who do not make use of the laryngoscope, or if they do, are not skilful in its manipulation, often prescribe warm inhalations of some volatile and seda-

tive agent, with a view of quieting cough, and sometimes lessening the quantity of sputa. It is my conviction, at the present time, that this is bad practice, excepting where it is rendered absolutely necessary, for though the patients frequently find temporary relief from their painful paroxysms, they are apt to catch severe colds after making a trial for a while of these inhalations.

There is another and most important category of cases: they are those in which the morbid process in the larynx has not advanced sufficiently for us to determine positively whether or not it be phthisical in its nature. What we can safely affirm, however, of many such instances is that they are likely to become phthisical unless cured within a limited period, and that, too (more than by other means), by the frequent topical use of astringents. Such cases are seen amongst young people usually, between 20 and 35 years of age, who, already rather delicate in appearance, with a phthisical family history, contract an inflammatory affection of the respiratory tract, but especially implicating the mucous membrane of the larynx. I have known such patients, under general treatment alone, continue indefinitely without getting well, when by a systematic local treatment of a few months they have entirely recovered.

In view of what I have already seen, and what appears most probable and rational, I hold to-day that these patients would develop both laryngeal and pulmonary phthisis, if permitted to remain without systematic local treatment. It is an error, as clinical experience frequently shows, to hold that pulmonary phthisis invariably begins within the lungs, and that laryngeal phthisis is but a secondary phenomenon. Undoubtedly this is often true—undoubtedly we can diagnose readily at times pulmonary destructive lesions when the inflammatory appearances within the larynx are still present; undoubtedly there are examples where, during life, physical methods of examination have left the condition of the lungs undecided, although the larynx was evidently involved, and yet after death an autopsy has revealed consolidation of tissue and deposit of tubercle.

Opposed to these frequent examples in the daily experience of almost every practitioner, which go to show that pulmonary phthisis in one of its forms has possibly or probably existed prior to or concomitant with commencing laryngeal disease of phthisical nature, there are infrequent cases in which the contrary holds true. I have seen and closely watched during many months more than one case in which the most rigid physical examination discovered no evident signs of pulmonary phthisis, in which no sufficient general symptoms were present which could not fairly be attributed to another and obvious cause, in which there was very slight elevation of temperature, but little loss of flesh or strength, and only a moderate amount of sputa. Such a patient, however, has had dysphonia, slight dysphagia, cough, and the physical evidences of chronic laryngeal catarrh,—all of which, by their obstinate duration under treatment, in an individual with a hereditary tendency to pulmonary disease, and impoverished nutrition (due to fatigue, anxiety, and bad hygienic conditions generally), convinced me that unless the laryngeal affection were faithfully and properly treated, it would slowly, but surely, be the efficient cause of pulmonary phthisical development. Of course, few autopsies can or ever will exist, to justify this belief. Of necessity, it rests almost solely upon a clinical basis. Patients of this sort do not die either of the laryngeal catarrh, nor yet again of a pulmonary disease at an advanced stage which is not yet present. But wait one, two, three, or more years, and they may then fall victims to pulmonary consumption, and if the laryngeal affection has not, to pathological research, advanced *pari passu* with the pulmonary disease, the verdict of the autopsy will be: "Patient died of pulmonary phthisis; examination of larynx shows phthisical ulcerative disease at an earlier stage of development," and this opinion, I sustain, is in part erroneous. The morbid lesions within the larynx are not really at an earlier stage of development, at least they are not so in one sense: for they actually opened the scene of phthisical disease, but, owing to one cause or another, they have at a certain period

become delayed or arrested in their destructive march, whilst the pulmonary affection, which began subsequently to them, has, from the time of its origin, taken a more rapid course.

The practical conclusion of the foregoing statements is: treat all cases in the beginning of laryngeal disease, in patients threatened with phthisis, by local applications properly made, and *some* patients at least will never develop pulmonary phthisis, either of the catarrhal or tubercular form. Whenever a case of laryngeal phthisical disease has advanced to the stage of œdema and ulceration, hope of ultimate cure should not even then be abandoned, but our duty plainly is to follow up suitable local treatment, combined with general medication, as long as the patient derives the slightest apparent benefit from it. Whenever "the nature of the disease is obvious, and other measures appear of no avail," I believe now, as formerly, that the operation of tracheotomy should be performed.

1. Because it "is certainly a palliative procedure of much value."

2. "It may ultimately be found a direct curative means yielding very favorable results."

"To obtain these latter," as I have elsewhere affirmed, "it seems indicated not to delay the operation to a late date" (*Am. Jour. Med. Sciences*, April, 1879, p. 416).

## THE PROGNOSIS OF LARYNGEAL PHTHISIS.\*

By WILLIAM PORTER, A. M., M. D.,

ST. LOUIS.

HOWEVER much opinions vary regarding the pathology and treatment of laryngeal phthisis, the question of prognosis meets an all but universal answer. My purpose in presenting this subject is to call forth an expression from this Association, which, clothed with authority, will have weight as a standard for future reference. For this reason I shall raise the question, rather than discuss it at length: *Is laryngeal phthisis necessarily fatal?*

The readiness of the answer as to any given instance will depend upon the amount of complication, the extent of the disease, the age of the patient, and many other considerations. These have to do with the verdict in every case, but as an abstract conclusion, can we say that, in any event, laryngeal phthisis, as now defined and recognized, may end in recovery?

There has been practical result obtained, so far as the preservation of life is concerned, since phthisis became a study, and we are now justified in the hope that of a certain number of cases of pulmonary tuberculosis, some will recover. The reports of the British Registrar-General during the last few decades show a marked reduction in the percentage of deaths from phthisis to deaths from other causes. Heitler found on the *post-mortem* table 780 subjects with healed (cured) tubercular patches; Flint's elaborate record is well known to us; McCall Anderson has even reported

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\* Read before the American Laryngological Association, session 1881.

three cases of recovery from acute tuberculosis ; more than this, I doubt not but that in the experience of each one here, there are instances of unchallenged pulmonary tuberculosis in which the disease was arrested and the patient lived out his expectancy. The literature of yesterday doomed the phthisical patient almost without a hearing, and "consumption" was synonymous with death. To-day we hold a better faith—one, we think, well founded.

At present the recorded opinions of authority teach that laryngeal phthisis may only be retarded ; that it is progressive, and ultimately fatal. In his scholarly essay of 1879, Heinze's third and last conclusion is that "a cure of laryngeal tuberculosis will most probably never be made." Lennox-Browne voices the generally-received opinion in a recent number of these ARCHIVES, when he says : "Not even the most sanguine throat specialist is yet justified, according to our experience, in giving even a moderately hopeful opinion as to result."

I cannot subscribe to this doctrine of the inevitable fatality of laryngeal phthisis, and will be happy if sustained by this Association, or even by a minority of those present ; but if those of you best qualified to judge, deny the position I assume, and affirm that our best practice here is but palliative, I will yet hope, remembering how great has been the change in the conclusions but recently held by many of our guild concerning laryngeal phthisis, especially as to pathology.

(a.) *Theoretically*, laryngeal phthisis is not necessarily fatal. Phthisis, you will admit, and I shall not wait to prove it, is a constitutional disease. "Pulmonary tuberculosis is not primarily a disease of the lungs or air passages." "The tuberculous products proceed from a prior morbid condition of the system" (Flint), having most frequently its local expression in the lungs. We believe, however, if the record is worth any thing to us, that from this, recovery is possible. Does, then, the determination of this local expression to other parts—to the larynx, if you please—admit of no release?

Phthisis in the lung and phthisis in the larynx are like

morbid processes, though modified by the formation and function of the parts involved. The pulmonary and laryngeal complications are the outgrowth or localization of the same systemic fault, occurring in the same great tract. Indeed, the pathological conditions are not only in each alike, but, as shown by Foster, may extend from the lungs to the larynx by continuity of surface. We know, further, that a catarrhal change may often be the exciting cause of tubercular disease in the lung, and that the larynx is also readily involved in catarrhal inflammation. Many other points of resemblance and identity in the etiology and pathology of the pulmonary and laryngeal diseases, I need not refer to in this presence.

Let me repeat that if from the local expression of phthisis in the lung patients recover, in theory, at least, such a result may follow the laryngeal complication. It seems the more probable because, while using general remedial agents, the larynx is comparatively easily reached by local applications. Shall we say that phthisis in the lung may yield to generally directed effort, while the same effort, together with our best local and special treatment, avails nothing when phthisical change is found in the larynx; and this, even though it be of the same character, and in the same tract as the other—in fact, the same disease? If this is true, it were better, perhaps, for the patient that his disease be beyond our immediate reach.

(b.) But theory is valueless if not in accord with fact. What *practical* argument can be adduced to show that laryngeal phthisis is not necessarily fatal? In all candor, and yet confidently I say, the best. I am glad, indeed, that my experience has not been an exceptional one. Schmidt and especially Rossbach have placed themselves on record in this matter, and of our own number are some who have given valuable evidence as to the possible favorable termination of laryngeal phthisis.

Bear with me while I briefly relate two cases selected as typical, and a third which is scarcely less indicative.

CASE I.—Mr. H., æt. 41, of Arkansas, first seen October 9, 1878. There was no history of phthisis in his family. Ten months prior

to date given, he had pain in his chest, recurring fever, and continuous hacking cough. Had lost flesh and appetite, and for three months had been hoarse. A week before I saw him he had slight hæmoptysis. When examined there was thickening over the arytenoids, and marked infiltration of the ventricular bands. The intra-arytenoid mucous membrane was eroded and the cords inflamed and roughened. The left pulmonary apex was comparatively dull with prolonged expiration and whisper. Pulse and temperature slightly heightened.

The patient responded to treatment both general and local, and in March of present year—two and a half years after—called to see me with this report : “ During the last year have been entirely free from evidence of disease, and have not lost a day from business.” I examined the larynx carefully, and found no trace of disease save slight congestion of the cords, due probably to exposure the night before in travelling. I could detect no indication of pulmonary lesion.

CASE 2.—Miss N., of St. Louis, æt. 23, examined November 25, 1878. Her mother had died of phthisis ; the rest of the family being free from lung trouble of any kind. The patient had cough, had been losing flesh for six months, and of late had night sweats. During two months had been unable, on account of hoarseness, to continue her work as a music teacher. There was no ulceration in the larynx but much thickening, especially upon the right side. The mucous membrane over the right arytenoid was greatly infiltrated, preventing approximation of the cords. There was infiltration of the right ventricular band, and slight roughening of the edge of the corresponding cord. Dulness with feeble respiration and subcrepitant râles were found at right pulmonary apex.

Thirteen months afterward I saw Miss N. for the last time. She had recovered in weight and strength, and her voice was almost normal. There was still some slight thickening of the arytenoid, but the other appearances of disease in the larynx could not be seen. In the lung the only evidence of lesion I could find was slightly prolonged expiratory murmur. Within the last fortnight her physician, a most competent diagnostician, told me that she was well, and, six months before, had resumed teaching.

The third and last case I shall mention is more recent, hence less important as testimony, but to me it has been so

instructive and the favorable changes so rapid that I will briefly report it.

CASE 3.—Miss S., of Illinois, a tall, slender girl of 22, consulted me September 26, 1880, on account of hoarseness, cough, and loss of flesh. She had been sick for a year from the effects, as she thought, of a cold contracted by an open window in the school-room. The hoarseness had existed six months, and of late she was almost aphonic. There was no history of phthisis in any other member of her family.

I found great irritation over the left arytenoid and of the left ary-epiglottic fold, while the cord of the same side was thickened and irregular. There was incomplete movement of the left side, owing to the condition of the arytenoid. There was disease plainly evidenced in left pulmonary apex.

The patient remained in the city under constant care, and did badly for a while. Her appetite was poor, and loss of flesh and cough continued. October 20th, while waiting in my office, she had a severe pulmonary hemorrhage. Soon afterward she began to improve, and so continued, though three weeks later there was again hæmoptysis, but slight and without ill effect. I need not trace the successive steps of her progress, which was constant but slow.

I saw her last three weeks ago. She had almost regained her normal weight; her appetite was good, there was but little cough, and her voice, though weak, was clear and distinct. There was yet some thickening in the arytenoid region—the only evidence of disease remaining. The ary-epiglottic fold seemed normal, and the cord was free. The lung showed like improvement, slight dulness and prolonged expiratory murmur being all the indications of disease present. A few days prior to this writing she sent me the message that her improvement was uninterrupted.

It is true that this history does not, as do the others, show complete restoration, but so marked has been the recent change that it is certainly promising, and I would do no violence to my belief were I to predict entire recovery.

Reflecting upon these cases, all of them undoubtedly belonging to the sixth class of Beverley Robinson,<sup>1</sup> and upon others less favorable in result, I have been led to doubt the

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<sup>1</sup> "Laryngeal Affections of Pulmonary Phthisis." *Ante* p. 306.

doctrine of the necessary fatality of laryngeal phthisis. It is more than probable that the diagnosis in these cases will be disputed. Be it so, I have not met with better-defined types of disease, and upon the laryngoscopic evidence alone, aside from the fact of coëxisting pulmonary lesions, the diagnosis would be unquestioned by any one, had the patients died. But they lived; therefore, some may say the diagnosis was wrong. Such a test is easy to apply, but it is unscientific, if nothing else, to frame conclusions from it. I grant you these are exceptional results, at least in my experience. All I claim is that some cases of laryngeal phthisis end in recovery, and this I have tried to prove.

You will pardon me in that I have omitted all reference to special treatment, when so much has been written, and well written, upon the subject by members of this Association. What has been said is for mutual encouragement to persevere in such cases, and not to claim special skill or tact in conducting them.

Let me conclude with the wish that each of you may have proof in his own experience of the truth of the position here taken, and find more cases of recovery from laryngeal phthisis than those I have, by your kindness, been permitted to report.

## A CASE OF TUBERCULAR ULCERATION OF THE TONGUE.\*

By F. H. BOSWORTH, M.D.,

NEW YORK.

**I** REPORT the following case, not only for the essential interest which attaches to it, but also from the very important bearing which this form of ulcerative disease, occurring in the pharynx or mouth, has upon the vexed question of laryngeal phthisis, as enabling us to study its clinical characters and progress in a region more open to direct ocular inspection, and, at the same time, one in which the disease is not subjected to the untoward influence of the constant functional activity which is inseparable from the morbid process in the larynx.

H. T. W., a carpenter, æt. 41, was referred to me on March 20, 1881, by Prof. J. W. S. Gouley, of New York, presenting the following history: He comes of a healthy family, in which he has never known of any lung troubles. His own health has always been good, although he has never been thoroughly robust.

In July, 1877, he had an attack of hæmoptysis, the source of which was undoubtedly in the lungs. After this ceased he commenced to suffer somewhat from a cough, with loss of flesh. During the summer of 1877 he continued to expectorate bloody sputa, but in the fall of the same year the bloody expectoration ceased, and has never recurred, although his cough has continued somewhat ever since. In September of 1878, a little over a year after his first hemorrhage, there appeared on the left side of his tongue, and

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\* Read before the American Laryngological Association, session 1881.

about one inch from its tip, a small blood-blister, as he describes it, about a half inch in diameter. This soon broke into an open ulceration, which, by a slow progress, eroded tissue and produced an excavation in the substance of the tongue, while at the same time it extended its borders. This ulceration was described as being exactly similar in appearance to the ulceration which came under my observation later. The only local treatment which was resorted to at the time was daily cauterization with nitrate of silver. This ulceration lasted eight months, and finally cicatrized in the spring of 1879, his general health having in the meantime markedly improved.

In the fall of 1879 the ulceration recurred in the same spot, and the experience of the former winter was repeated, the ulcer remaining open during the winter, and, being subjected to the daily cauterization, cicatrized with the return of the warmer weather of the early summer of 1880, his general condition also improving.

In October, 1880, the ulceration recurred again in the same locality, and extended somewhat more rapidly than before, and now his general health commenced to be more affected. During this whole time, from the original occurrence of the disease, he had continued to be troubled with a cough, together with apparently a laryngeal catarrh. He was subject to hoarseness and more or less secretion from the throat, but never experienced any special discomfort referable to the larynx.

About the first of January last he commenced to suffer more prominently from pain in his throat, with difficulty in swallowing, and more marked impairment of voice ; he also commenced to lose flesh more rapidly, and the ulceration of the tongue to extend. The tongue became swollen, red, and extremely sensitive. Small whitish-gray spots or patches commenced to appear beyond the ulcerated surface, some of which occasionally would disappear, while others would develop into open ulceration.

On March 21st he came under my care, at which time his condition was as follows : He was pale, anæmic, markedly emaciated, and with all the appearances of one suffering under some profound dyscrasia. The examination of his chest revealed a moderate amount of dulness over the apex of the left lung, with numerous soft, moist râles, while over the apex of the right lung the respiratory murmur was somewhat harsh and rude in character.

The laryngoscopic examination showed the mucous lining of the

larynx markedly pale and anæmic, and the arytenoid cartilages of each side swollen and club-shaped, the swelling extending to the ary-epiglottic folds. Extending from the left arytenoid cartilage to the thyroid there was a broad ulcerated surface, involving the true cord and ventricular band, and presenting all the appearances of true laryngeal phthisis. The epiglottis was not involved. The main point of interest in the case, however, was found in the tongue, for on this organ was found the most serious and extensive morbid change. The left side of the tongue, from the anterior faucial pillar to its tip, was found to be the seat of an ulcerative process, whose appearance was both striking and characteristic. It was of a grayish-pink color, and covered with a thick, tenacious, ropy muco-pus. It showed a progressive erosion of the organ, by which fully one third of the left segment of the tongue had been destroyed. This destructive process seemed to have been a melting down, as it were, of the tissues, an essential waste or phthisis of the organ. There was no excavation, and no reddened areola surrounding the ulcer, and the appearance was exactly similar to that which we see in the larynx in advanced cases of laryngeal phthisis. Beyond the border of the large ulcer there were several smaller points of isolated ulcerative action, and also a number of patches, varying in size from one to five lines in diameter, which were peculiar; they were dirty grayish-white patches, which seemed to infiltrate the epithelial layer of the membrane, and were slightly raised above the surface; they were seemingly, and, I think, in reality, small patches of fibrinous exudation.

This patient has been under my observation now seven weeks, and during that time I have watched his progress with no little interest. His general condition, bad when I first saw him, has grown steadily worse. The pulse has varied from 100-120, the temperature from 100° to 101°, with marked evening exacerbations, which showed occasionally a temperature of 103°.

On April 13th there occurred a serious mishap, which it may be of interest to record, viz. : the setting in of a persistent and obstinate hiccough, which lasted for ten days without intermission night or day, thus robbing him of rest and sleep, and under which his strength failed rapidly. In connection with the hiccough there was also obstinate vomiting, he being able to retain nothing whatever on his stomach for five days. After trying every thing which my ingenuity could devise, I suggested buttermilk, which he took and retained, and on which he has lived almost solely ever since.

For the hiccough I found nothing gave him any relief except the inhalation of chloroform, under the liberal use of which this distressing and obstinate symptom left him.

His general condition grew worse, his laryngeal symptoms became more distressing until, when I saw him yesterday, he was extremely averse to taking any food merely from the pain in swallowing. The ulceration of the tongue has slowly progressed, attended with all the symptoms of laryngeal phthisis, exquisite pain on motion, and tenderness on pressure.

The appearance of the lingual ulcer I need not attempt to describe more minutely; it was unmistakably the same disease which in the larynx we call tuberculosis or laryngeal phthisis; it is typical and characteristic, and resembles no other form of ulcerative action. I fully endorse all that Lennox Browne has said on this subject, in commenting on the assertion of other writers, that "phthisical ulcerations present no signs by which they can be recognized as such." Browne says that, "with the exception of laryngeal growths, we know of no disease in which we can be so sure of our diagnosis."

In the chapter on laryngeal phthisis, in the "Diseases of the Throat and Nose," recently published by myself, I described three stages as attending the development of that disease: *the first*, of pyriform thickening of the arytenoid; *the second*, that of infiltration of the epithelial coat of the mucous membrane; and *a third*, of fully developed ulceration. In tubercular ulceration of the tongue, of course, the first stage of laryngeal phthisis has no counterpart, and the first stage will be that of infiltration. In the chapter above alluded to, this second stage was described as "a small whitish-gray patch, slightly raised above the surface, and seemingly an infiltration of its epithelial layer." In the third stage, or the stage of ulceration, I wrote: "The grayish patch gradually changes from an apparent quiescent state to one of active discharge; the superficial layer of epithelium being thrown off and new cells being produced, they gradually degenerate into pus cells; the surface of the former gray patch becomes yellow in color, the discharge becomes purulent in character, and the ulcerative action becomes fully

established." In the case whose history I have given above, there was afforded me an opportunity of verifying the above observation in a most marked manner, and one which I have never before enjoyed in such a satisfactory degree. It will be recalled that I spoke of small gray patches making their appearance in the mucous membrane beyond the border of the large lingual ulcer. These I could watch very carefully and individually; occasionally they would appear and subsequently seem to be exfoliated, leaving fairly healthy membrane beneath; while in other cases they underwent the degenerative process above described, and developed into small points of ulceration, which coalesced with the larger ulcer, or established new centres of destructive action. This process I saw repeated in a number of individual instances, and it was certainly most interesting and instructive; and mainly so, as verifying in my own mind certain conclusions which I have for a long time entertained as regards the nature of phthisical ulcerations in the larynx and upper air-passages, viz., that they are not due primarily to a deposit of tubercle, but are of inflammatory origin; and that if tubercles play any part in their progress, it is only secondary; and that the tubercular deposits found in the examination of these cases are simply the scattered gray nodules which are found, as a rule, about the base of any ulcerative process of long standing.

To recur somewhat: the clinical history of these cases is sufficiently indicated in the one reported. This form of ulceration is a local outbreak of that peculiar and profound dyscrasia or diathesis which we call the tubercular. The most frequent local manifestation of the disease is in the lungs, after that in the larynx, and more rarely in the pharynx and oral cavity. It may occur in the upper air-passages before the pulmonary disease has developed, or it may make its appearance during the course of pulmonary phthisis; but when it does occur, and this is the point which I would urge with emphasis, it presents appearances which are almost pathognomonic. These appearances may be briefly stated as a pinkish-gray surface, with an appearance which is well described by La Boubene as worm-eaten; the ulcer-

ated surface is not depressed ; there is no areola of redness in the surrounding membrane ; the discharge is a thick, tenacious, ropy mucus or muco-pus ; the outline is fairly well marked, with an approach usually to an oval shape, the general coloration of the ulcerated surface and the surrounding membrane being much the same ; and there is a loss of substance by a progressive waste or melting away of the tissues,—the whole completing a picture so typical that, in my view, there need be no uncertainty in the diagnosis ; and we should recognize a phthisical or tubercular ulcer as such, and with the same positiveness as we recognize the syphilitic.

As regards the prognosis and treatment of this form of ulceration as occurring on the tongue, it may be comprehended in the assertion that the literature of the subject contains no single case which has terminated otherwise than fatally.

NOTE.—The patient died of exhaustion on May 15, 1881, about a week after this paper was read. At the time of his death the pulmonary disease had not progressed sufficiently to have caused a fatal termination. He died apparently from the general dyscrasia, which had led to the development of local lesions in the lungs, larynx, and tongue. A *post-mortem* examination was not permitted.

# CONTRIBUTIONS TO THE NORMAL AND PATHOLOGICAL HISTOLOGY OF THE CARTILAGES OF THE LARYNX.

By LOUIS ELSBERG, M.D.,

NEW YORK.

## CHAPTER I.—ESSENTIAL STRUCTURE OF HYALINE CARTILAGE.\*

### SECTION I.—*Historical.*

FROM the earliest time of histology to the present, true cartilage, such as the thyroid cartilage, has been looked upon as one of the simplest tissues. To distinguish it from other kinds of cartilage, in which either a fibrous or a reticular aspect has been recognized, it is called hyaline, *i. e.*, resembling glass. The description of its structure, by MECKAUER in 1836,<sup>1</sup> is essentially as that by KLEIN in 1880,<sup>2</sup> viz., that it consists of a firm homogeneous basis-substance, in which are imbedded numerous small cartilage-corpuscles. Meckauer wrote before the cell-doctrine, which has exercised so powerful an influence upon the medical mind, had been thought of. Indeed, that doctrine itself, as its founder, Schwann,<sup>3</sup> has recorded, was based to a large extent upon

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\* Read before the American Laryngological Association, session 1881.

<sup>1</sup> De penitiori cartilaginum structura symbolæ. Diss. anat.-phys., auctore M. Meckauer, M.D. Breslau: Schultz & Co., 1836, Tab. 4, pp. 16.

<sup>2</sup> Atlas of Histology. London: Smith, Elder & Co., 1880, p. 48.

<sup>3</sup> Mikroskopische Untersuchungen über die Uebereinstimmung in der Structur und dem Wachstume der Thiere und Pflanzen., von Dr. Th. Schwann. Berlin: G. E. Reimer, 1839, pp. 270. Microscopical researches into the accordance in the structure and growth of animals and plants. Translated by Henry Smith. London: Sydenham Society, 1847. Introduction.

investigations of the constitution of cartilage. After J. Müller had described cartilage-corpuscles that were hollow, and Gurlt had spoken of some as vesicles, when Schwann had succeeded, as he thought, "in actually observing the proper wall of the cartilage-corpuscles, first in the branchial cartilages of the frog's larvæ, and subsequently also in the fish," he was led by these and other researches to conjecture "that the cellular formation might be a widely extended, perhaps a universal principle for the formation of organic substances."

Schwann considered that the cartilage-corpuscles, or cartilage-cells as they were thenceforth called, are imbedded in a matrix which is capable of producing the cells, and which he therefore called cytoblastema. Goodsir, Naegeli, and finally Virchow advanced the histology of cartilage in so far as they claimed that the cartilage-cells can not possibly arise from the matrix or intercellular substance. Even Virchow adhered, however, to the idea of Schwann, that the cartilage-cell is a vesicle filled with a more or less transparent fluid, in which is suspended the nucleus; and, although he was aware of the life of the cell in general, nothing was suggested by him as to the life of cartilage. It is true Donders and H. Meyer had observed that the cells of hyaline cartilage were capable of proliferation<sup>1</sup>; nevertheless the idea became prevalent, more perhaps from implication, because on account of the absence of blood-vessels it was believed not liable to inflammation, than from any direct statement to that effect, that cartilage was devoid of life. The vitality of cartilage-corpuscles was made clearly probable by the observation of the effect of electrical shocks upon them, by Heidenhain,<sup>2</sup> and by Rollett,<sup>3</sup> and the investigations of Reitz,<sup>4</sup> Boehm,<sup>5</sup> Hutob,<sup>6</sup> and Bub-

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<sup>1</sup> (Mueller's) *Archiv für Anatomie*, 1846.

<sup>2</sup> Studien aus dem physiologischen Institut zu Breslau, ii Heft, 1863.

<sup>3</sup> Stricker's Handbuch der Lehre von den Geweben : Article "Knorpelgewebe," 1868.

<sup>4</sup> Sitzungsber. der K. K. Akademie der Wissensch. in Wien., Bd. 55, 1867.

<sup>5</sup> Beiträge zur normalen und pathologischen Anatomie der Gelenke. Inaug.-Dissertation, Würzburg, 1868.

<sup>6</sup> "Untersuchungen über Knorpelentzündung." *Wiener. med. Jahrbücher*, 1871, p. 399.

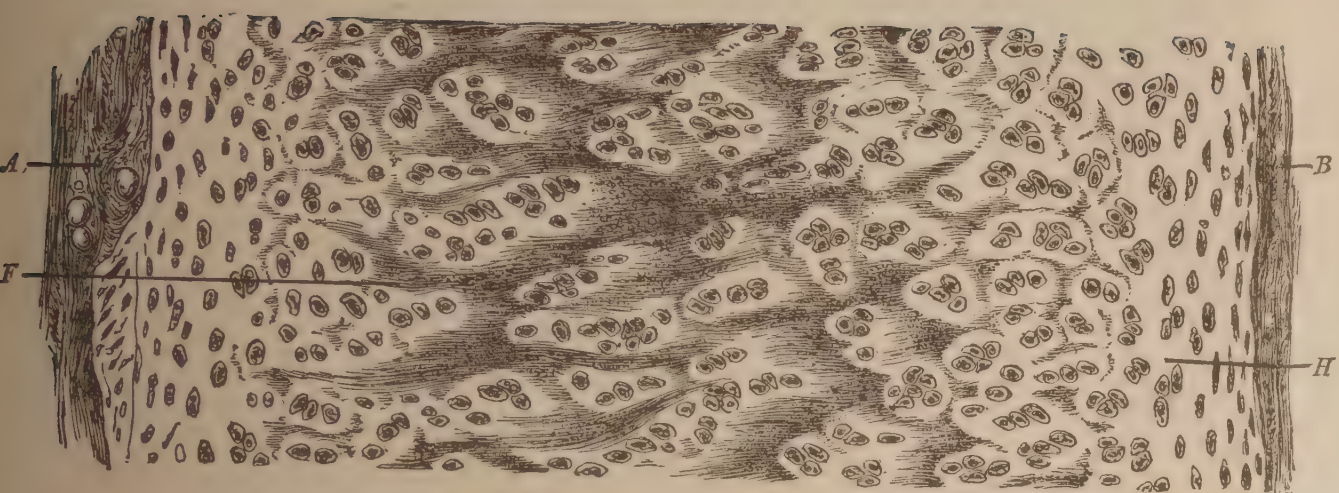


FIG. 1.

Plate of the Thyroid Cartilage of Adult. Longitudinal Section. x 100.  
*A.*—Perichondrium toward the mucous membrane.  
*B.*—Perichondrium toward the skin.  
*F.*—Fibrous portion of cartilage in the centre.  
*H.*—Hyaline portion, on either side, near the perichondrium.

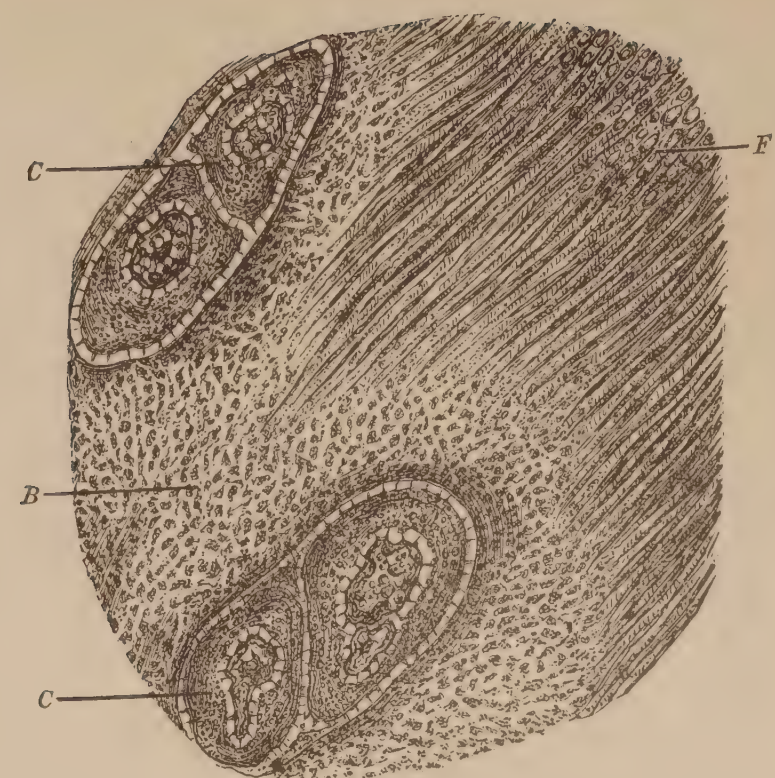


FIG. 3.

Thyroid Cartilage of Adult. Sagittal Section. x 1200.  
*C.*—Cartilage corpuscles.  
*B.*—Indistinctly reticular hyaline basis-substance.  
*F.*—Fibrous basis-substance.

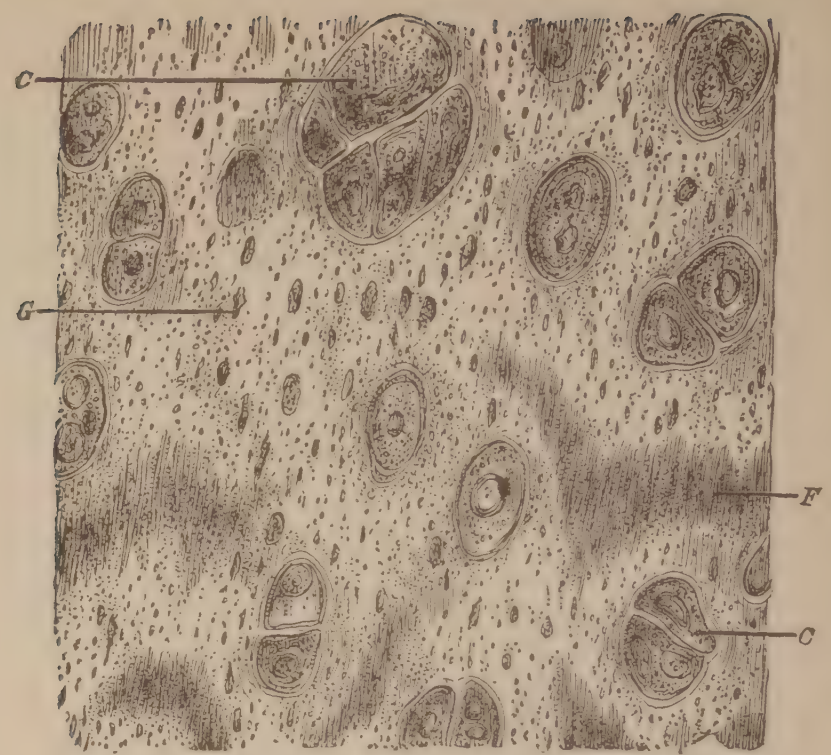


FIG. 5.

Thyroid Cartilage of Adult. Horizontal Section. x 600.  
*C.*—Cartilage corpuscle.  
*F.*—Fibrous portion of cartilage.  
*G.*—Granules of living matter.

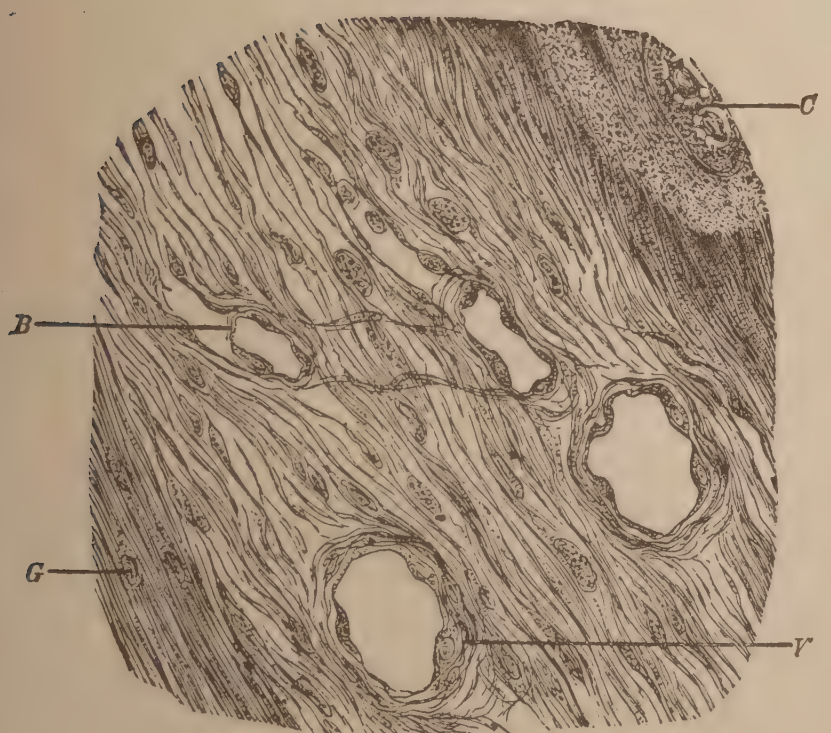


FIG. 2.

Fibrous Portion of Thyroid Cartilage. x 600.  
*C.*—Cartilage corpuscle, surrounded by a dense basis-substance.  
*G.*—Granules of living matter.  
*B.*—Capillary blood-vessel.  
*V.*—Small vein.

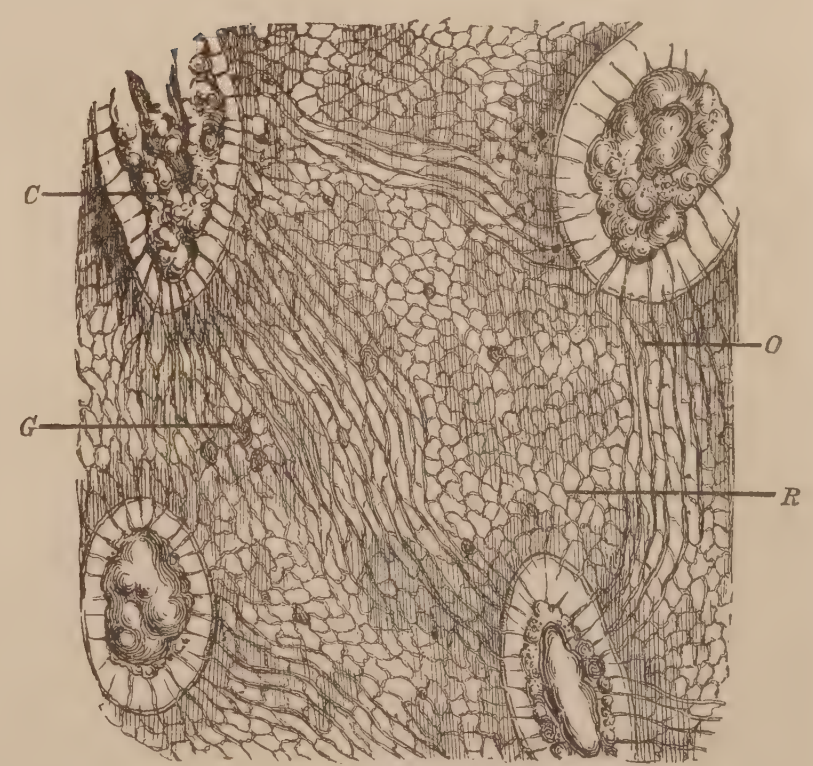


FIG. 4.

Thyroid Cartilage of Adult, kept in strong Alcohol. Horizontal Section. x 1200.  
*C.*—Shrivelled cartilage corpuscle.  
*O.*—Longitudinal offshoots.  
*R.*—Reticulum in basis-substance.  
*G.*—Granules of living matter.

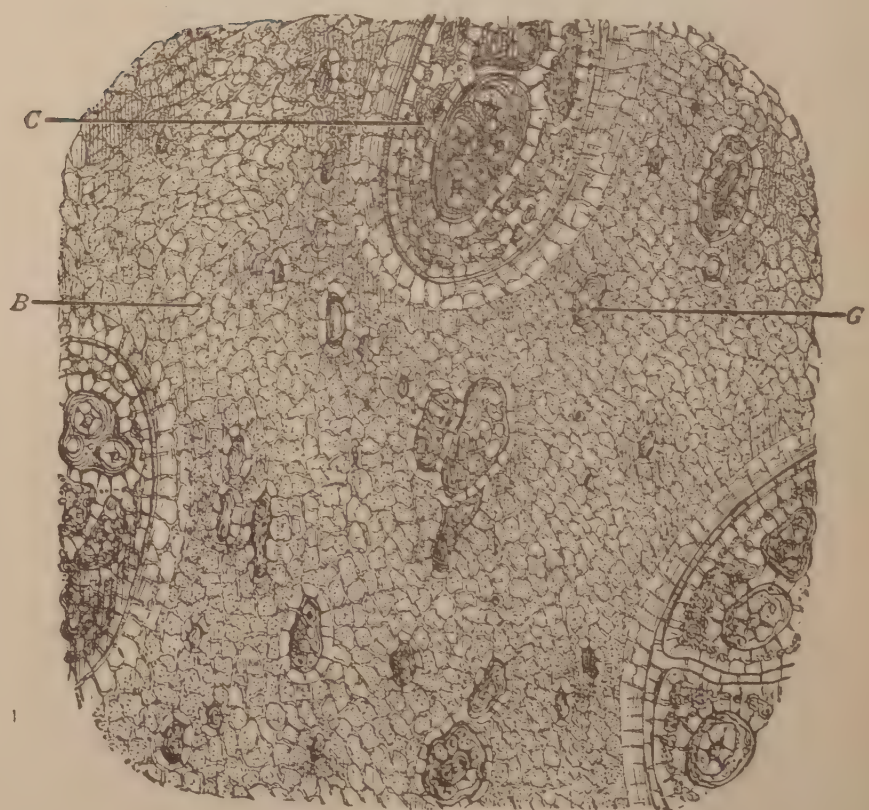
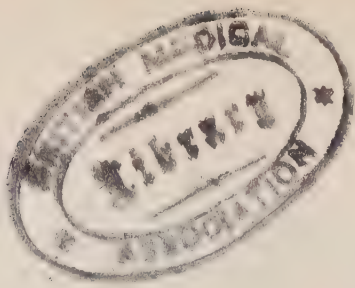


FIG. 6.

Thyroid Cartilage of Adult. Horizontal Section. x 1200.  
*C.*—Cartilage corpuscle.  
*B.*—Hyaline basis-substance.  
*G.*—Granules of living matter.



noff,<sup>1</sup>—investigations which, except Boehm's, were made under Stricker; it was proved positively by Heitzmann in 1873.<sup>2</sup>

With the question whether or not the so-called cartilage-“cell” is alive, another question arose, viz., how can so isolated a corpuscle (imbedded in a firm “intercellular” substance) obtain nutrition? It was assumed that the nourishing liquid reaches the corpuscle either by diffusion or else through canals, or clefts, or fissures in the homogeneous basis-substance. The idea of the existence of juice-channels originated with Von Recklinghausen. He found in silver-stained preparations of the cornea, communicating colorless spaces on a dark background, and believing that the cornea consisted of fibrillary tissue knit together by a cement-substance, he thought that this cement-substance was tunneled by a system of communicating-canals, “*Saft-Kanälchen*,” and that it is this system of canals which is not stained by silver. Innumerable investigations, under all sorts of circumstances, have been undertaken to settle satisfactorily whether preformed juice-channels exist in cartilage, or whether juices can be imbibed without such. In lower animals corresponding canals had long been reported to be found, by Queckett<sup>3</sup> and by Bergmann<sup>4</sup> in cephalopodes, and by Leydig<sup>5</sup> in various fishes; and certain pathological observations by Virchow,<sup>6</sup> Zahn,<sup>7</sup> Cornil and Ranvier,<sup>8</sup> and Rindfleisch,<sup>9</sup> as well as senile changes studied by Weichselbaum,<sup>10</sup>

<sup>1</sup> Beiträge zur Kenntniss der Structur des Knorpels. Sitzungsber. der K. K. Akad. d. Wiss. in Wien., Bd. 57, 1868.

<sup>2</sup> “Das Verhältniss zwischen Protoplasma und Grundsubstanz im Thierkörper.” Sitzungsber. d. K. K. Akad. d. Wien. Wien., Bd. 67, 1873, and *Wien. med. Jahrbücher*, 1873.

<sup>3</sup> Catalogue of the historical series in the museum of the Royal College of Surgeons, 1850, vol. i, p. 102.

<sup>4</sup> Disquisitiones microscopicae de cartilaginibus in specie hyalinicis. Inaug.-Dissert., Dorpat, 1850.

<sup>5</sup> “Zur Anatomie und Histologie der Chimæra monstrosa.” *Mueller's Archiv*, 1851, p. 242.

<sup>6</sup> “Ein Fall allgemeiner Ochronose der Knorpel und knorpelähnlichen Theile.” *Virchow's Archiv*, xxxvii, 1866, p. 212.

<sup>7</sup> “Über Pigmentinfiltration des Knorpels.” *Ibid.*, lxxii, 1878.

<sup>8</sup> Manuel d'histologie pathologique, Paris, 1869, p. 427.

<sup>9</sup> Lehrbuch der pathologischen Gewebelehre. Leipzig, 1878, p. 553.

<sup>10</sup> Sitzungsber. der K. K. Akademie d. Wiss. in Wien., Bd. 75, 1877.

seemed to point to their presence in man. Pigment particles were introduced into the circulation in the hope of discovering the manner in which they penetrate the tissue of cartilage, by Gerlach,<sup>1</sup> Maas,<sup>2</sup> Arnold,<sup>3</sup> and Nykamp and Treub<sup>4</sup>; Küttner, with the same end in view, introduced solutions into the trachea and examined the bronchial and tracheal cartilages<sup>5</sup>; and Hénoque,<sup>6</sup> Budge,<sup>7</sup> Tizzoni,<sup>8</sup> and others, forcibly injected liquids as well as solid particles into the tissues. The results of these experiments, and of examinations with various reagents, are contradictory of each other: For instance, while Bubnoff,<sup>9</sup> Hertwig,<sup>10</sup> Hénoque,<sup>11</sup> Loewe,<sup>12</sup> Thin,<sup>13</sup> Ewetzky,<sup>14</sup> Petrone,<sup>15</sup> Budge,<sup>16</sup> Nykamp,<sup>17</sup> Fürbringer,<sup>18</sup> and a number of others consider the existence of canals in the basis-substance of cartilage proved by their experiments and treatment of their preparations with silver nitrate, gold chloride, hyperosmic acid, chromic acid, ammonia bichro-

<sup>1</sup> Ueber das Verhalten des indigschwefelsauren Natrons im Knorpelgewebe lebender Thiere. Erlangen, 1876.

<sup>2</sup> "Ueber das Wachstum und die Regeneration der Röhrenknochen." *Archiv für klinische Chirurgie*, xx, 1877.

<sup>3</sup> "Die Abscheidung des indigschwefelsauren Natron im Knorpelgewebe." *Virchow's Archiv*, lxxiii, 1878.

<sup>4</sup> "Beitrag zur Kenntniss der Structur des Knorpels." *Archiv für mikroskop. Anatomie*, xiv, 1877.

<sup>5</sup> "Die Abscheidung des indigschwefelsauren Natron in den Geweben der Lunge." *Centralblatt f. d. med. Wiss.*, 1875, No. 42, p. 268.

<sup>6</sup> "Structure des cartilages." *Gazette médicale*, 1873, p. 589; p. 617.

<sup>7</sup> "Die Saftbahnen im hyalinen Knorpel." *Archiv für mikroskop. Anatomie*, xiv, 1877; xvi, 1879.

<sup>8</sup> "Sulla istologica normale e patologica delle cartilagini ialini." *Archivio per le Scienze Mediche*, ii, 1877.

<sup>9</sup> *Loc. cit.*

<sup>10</sup> "Ueber die Entwicklung und den Bau des elastischen Gewebes im Netzknoorpel." *Archiv für mikroskop. Anatomie*, ix, 1873, p. 80.

<sup>11</sup> *Loc. cit.*

<sup>12</sup> "Ueber eine eigenthümliche Zeichnung im Hyalinknoorpel." *Wiener med. Jahrbücher*, 1874.

<sup>13</sup> "On the structure of hyaline cartilage." *Quarterly Journal of Microscopical Science*, vol. xvi, 1876.

<sup>14</sup> "Entzündungsversuche am Knorpel," Vorläufige Mittheilung, *Centralblatt f. d. med. Wiss.*, 1875, No. 16; Untersuchungen aus dem path.-anat. Institut zu Zürich, iii Heft, 1875.

<sup>15</sup> Sulla struttura normale e patologica delle cartilagine e degli epiteli. Napoli, 1876.

<sup>16</sup> *Loc. cit.*

<sup>17</sup> *Loc. cit.*

<sup>18</sup> "Ueber das Gewebe des Kopfknoorpels der Cephalopoden." *Morpholog. Jahrbücher*, iii, 1877, p. 453.

mate, etc., etc., investigations by exactly the same means have convinced Sokolow,<sup>1</sup> Retzius,<sup>2</sup> Colomiatti,<sup>3</sup> Brückner,<sup>4</sup> Toldt,<sup>5</sup> Genzmer,<sup>6</sup> Gerlach,<sup>7</sup> Tillmanns,<sup>8</sup> Tizzoni,<sup>9</sup> and others, of just the contrary; and there is a third party which believes with Arnold<sup>10</sup> that the basis-substance is made up of fibrillæ, that there are delicate fissures between the fibrils, that these fissures penetrate the capsule, and that "the nutrient material passes through these interfibrillar and intracapsular fissures into the pericellular space." Flesch, the latest writer on the subject, adds<sup>11</sup> that these fissures need not necessarily be, and in fact are not, empty, but that they are occupied by the interfibrillar cement-substance, which, being of a "viscous-soft" (*zähweich*) material, permits the imbibition and conveyance of the nutrient liquid.

It is claimed that hyaline basis-substance consists of fine fibrils so closely held together by a cement-substance that the mass appears to be homogeneous. This idea, though not entirely novel, as the older anatomists seem to have had it,<sup>12</sup> has been brought forward by Tillmanns, and is doubtless original with him.<sup>13</sup> It is said that the interfibrillar cement-substance can be dissolved out by certain reagents and then

<sup>1</sup> Ueber den Bau des Nasenknorpels," etc., ref. Canstatt's Jahresbericht, 1870, p. 24.

<sup>2</sup> "Bitrag till Kännedomen um brusknäfnaden." *Nord. med. Arkiv.*, iv, 1872.

<sup>3</sup> "Sulla struttura delle cartilagini ialini e fibroelastica reticolata." *Gazetta Cliniche di Torino*, 1873, No. 32; *Rivista Clinica di Bologna*, 1874, No. 5; *Giornale della Acad. di Torino*, 1876.

<sup>4</sup> "Über Eiterbildung im hyalinen Knorpel." Inaug.-Dissert., Dorpat, 1873.

<sup>5</sup> Lehrbuch der Gewebelehre. Stuttgart, 1874, p. 143.

<sup>6</sup> "Ueber die Reaction des hyalinen Knorpels," etc. *Virchow's Archiv*, lxxvii, 1875; *Centralblatt f. Chirurgie*, 1875, No. 146.

<sup>7</sup> *Loc. cit.*

<sup>8</sup> "Beiträge zur Histologie der Gelenke." *Archiv für mikroskop. Anatomie*, x, 1874, pp. 354, 435.

<sup>9</sup> *Loc. cit.*

<sup>10</sup> *Loc. cit.*

<sup>11</sup> Untersuchungen über die Grundsubstanz des hyalinen Knorpels. Würzburg: A. Stuber, 1880.

<sup>12</sup> See: Wm. Hunter "On the structure and diseases of articular cartilages," *Philosoph. Transactions*, vol. xlii, p. 514, London, 1742-43; M. de Lásone, "Second memoire sur l'organization des os," *Mem. de l'Academie Roy. des Sciences*, Tome 69, Paris, 1752; more recently also: Hoppe, *Virchow's Archiv*, v, p. 175.

<sup>13</sup> *Loc. cit.*, p. 401; and "Ueber die fibrilläre Structur des hyalinen Knorpels." *Archiv f. Anatomie u. Physiologie*, Anat. Abth., 1877, p. 9.

the fibrillation seen under the microscope. According to the varying arrangement and interrelation of the fibrillæ, Tillmanns speaks of three types of cartilage tissue, viz., parallel-fibery, netform, and lamellous. No doubt he saw under the microscope appearances which underlie the distinction which he thus made, but, unfortunately, he misinterpreted these appearances. Nevertheless, he has had followers. Thus Baber reported<sup>1</sup> that, having undertaken to test the accuracy of Tillmanns' assertions, and not succeeding in finding the fibrillation, although he had followed Tillmanns' method of maceration, he accidentally made momentary pressure on the glass cover, and thereupon obtained satisfactory proof of the fibrillar constitution of the basis-substance. Reeves<sup>2</sup> has also convinced himself of the existence of normal fibrillation in human cartilage. Ziegler seems to have done the same<sup>3</sup>; and Flesch regards it as a matter beyond question. He speaks of it as "generally known and most easily demonstrable."<sup>4</sup> Furthermore, he thinks that some portions, or perhaps layers, of the basis-substance are more compact than others, and that this may also account for the facility of cleavage in determinate directions.

Leidy insisted<sup>5</sup> that the basis-substance of hyaline cartilage has a peculiar filamentous structure, but his interpretation, that the granular filaments run simply parallel to each other, does not cover the truth and has not attracted any attention. With the exception of Leidy, however, no one, until nine years ago, seems to have questioned the homogeneousness of the mass of basis-substance in which the separate corpuscles were supposed to be imbedded. In 1872, Heitzmann<sup>6</sup> first proved the presence of a network structure in the basis-substance; one year later he discov-

<sup>1</sup> "On the structure of hyaline cartilage." *Journal of Anatomy and Physiology*, vol. x, part i, October, 1875.

<sup>2</sup> "On the structure of the matrix of human articular cartilage." *British Medical Journal*, Nov. 11, 1876, p. 616.

<sup>3</sup> Bericht der 50. Naturforsch. Versammlung zu München, 1877.

<sup>4</sup> *Loc. cit.*, p. 74.

<sup>5</sup> Proceedings of the Academy of Natural Sciences of Philadelphia, vol. iv, No. vi, 1848; and *American Journal of Medical Sciences*, April, 1849, p. 282.

<sup>6</sup> *Wiener Medizin. Jahrbücher*, Heft iv, 1872.

ered the structure of so-called protoplasm to be reticular, and claimed that both the reticulum of the protoplasm and that of the basis-substance are identical in nature; viz.: that both consist of the living matter proper. Heitzmann says that examination, by means of an immersion lens No. 10, of a thin section of fresh articular cartilage, placed in a one-half-per-cent. solution of common table-salt reveals details heretofore overlooked, viz.: The bodies of the cells appear finely granular, bounded by a somewhat denser layer. The contour of a cartilage cell being accurately in focus, there appears between it and the basis-substance a light, very narrow rim, which is traversed by numerous extremely delicate, radiating, grayish thorns or streaks. All these thorns are conical, the broad base emanating from the body of the cell and the thin point directed toward the basis-substance. Wherever two cells lie close together, the light rim between them is pierced by grayish threads. When in a cell the nucleus is distinctly seen, a narrow light rim is found to surround it, which on being sharply focused, also shows radiating thorns, the basis of which emanate from the nucleus and the points of which blend with the protoplasm of the cell. On carefully examining the basis-substance, a very delicate, as if granular, configuration is recognizable, dark fields alternating with light ones, and in some places the impression is given that the light fields form ramifications, or even a delicate network. Heitzmann also described and figured specimens stained with silver nitrate and gold chloride, and announced the following conclusions: viz.: "The bodies of cartilage cells have radiating offshoots. These offshoots form a delicate granular reticulum in the basis-substance. At the points of junction of hyaline cartilage with fibrous cartilage and with periosteum, the offshoots are very large and broad. They connect neighboring cells either directly or else indirectly through intervening delicate offshoots." Somewhat similar appearances had previously been more or less vaguely described, but not properly interpreted or appreciated, by Remak,<sup>1</sup>

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<sup>1</sup> "Ueber die Entstehung des Bindegewebes und des Knorpels." *Archiv für Anatomie*, 1852, p. 63 et seq.

by Heidenhain,<sup>1</sup> by Broder,<sup>2</sup> by Fromann,<sup>3</sup> and possibly by others.

After Heitzmann, Hertwig<sup>4</sup> observed processes of living matter penetrate the basis-substance of reticular cartilage; and Colomiatti stated<sup>5</sup> that he had repeated the investigations of Heitzmann, but had failed to find cell offshoots in hyaline cartilage either after treatment with gold or silver or *in vivo*, although he had seen cartilage-cell offshoots in other than hyaline cartilage.

I have had the opportunity to repeat Heitzmann's investigations under his own eye and with his assistance, but the results as to their correctness at which I arrived, were, to the best of my belief, uninfluenced by him. I reported in 1875<sup>6</sup> that I had seen the network structure in the corpuscles of hyaline cartilage, in the nucleus and in the basis-substance, exactly as Heitzmann had described it two years previously.<sup>7</sup> "If the nucleus of the cartilage corpuscle be visible, it appears either homogeneous or composed of a dense meshwork of living matter. From its periphery proceed fine conical thorns, which lead to a meshwork pervading the whole corpuscle, the threads of which form, at the point of intersection, thickenings, granules, or small clumps of living matter. In the lighter-looking narrow seam, existing between the corpuscles and the surrounding matrix, we may also recognize fine threads which go from the periphery of the corpuscle and are lost to the view in the matrix. On examining such a fresh preparation upon the heated stage, we recognize, at a temperature of 86° to 95° F., a continual but very slow change in the living matter of those cartilage corpuscles which distinctly show the network; the points of intersection of threads move nearer

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<sup>1</sup> *Loc. cit.*

<sup>2</sup> Ein Beitrag zur Histologie des Knorpels. Dissert., Zürich, 1865.

<sup>3</sup> Untersuchungen über die normale und pathologische Anatomie des Rückenmarkes. II Theil. Jena, 1867, pp. 29, 30.

<sup>4</sup> *Loc. cit.*

<sup>5</sup> *Loc. cit.*

<sup>6</sup> Transactions of the American Medical Association, vol. xxvi, 1875, pp. 163 and 164.

<sup>7</sup> Untersuchungen über das Protoplasma. II. Das Verhältniss zwischen Protoplasma und Grundsubstanz im Thierkörper. Sitzungber. d. K. K. Akad. d. Wiss. in Wien, lxxvii, May, 1873.

together or go further apart; sometimes a few granules lying close to each other unite into one little lump, so that the threads between them disappear, then the latter reappear, lengthen and shorten; and this change in the form of the interior network continues for some little time, and without any perceptible influence upon the form of the corpuscle as a whole.

"Careful examination of the matrix reveals throughout its whole extent the existence of a very delicate, more or less distinct network of living matter; and in many instances the connection of the threads proceeding from the corpuscles with this delicate network can be traced.

"To show the structure of both the cartilage corpuscles and the matrix still more plainly, we may resort to the method of tinction of preparations by nitrate of silver and chloride of gold, as well as the examination of cartilage during normal calcification, and in its inflamed conditions.

"It is well known that chloride of gold stains living matter dark violet, while nitrate of silver acts upon the matrix, and by darkening it, makes the living matter appear of a light color or colorless. The appearances obtained thus complement each other; and the network proceeding from the corpuscles and ramifying all through the matrix, is seen, with the same magnifying power, as constituted by violet threads and granules in the first case, and by white processes or empty spaces in the second case. [Drawings illustrating both these appearances accompany my article in the *American Transactions*.] As the deposition of lime salts takes place only in the matrix, the living matter itself remaining free, careful examination during such depositions, especially in cases of artificially produced inflammation, also brings to view the fine network of living matter traversing the matrix."

In January, 1876, Thin's memoir was published,<sup>1</sup> in which he reported that, in particular preparations, he had seen "fine glistening fibres enter the cartilage substance, into which, however, he has not been able to follow them." Again: "The ordinary granular protoplasmic cells of hyaline carti-

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<sup>1</sup> It is dated August, 1875, *loc. cit.*

lage are analogous, according to the views of the author, to the stellate cells of the cornea and connective tissue generally." Thin obtained by silver staining appearances similar to Heitzmann's, but unfortunately misinterpreted them. He says: "Heitzmann believes that the appearances which he has reproduced are those of a cell and its protoplasmic processes. The author interprets the appearances shown in Heitzmann's own drawings as representing stellate spaces, and sees nothing in them that he can interpret as cell processes; being thus at one with him as regards the fact observed, but differing from him in regard to its interpretation." <sup>1</sup>

In 1879 Spina reviewed the subject.<sup>2</sup> He accorded to Heitzmann the merit of the discovery, but as in the intervening seven years I alone had publicly corroborated it, and he was not aware of that corroboration, he thought that "the existence of cells with solid offshoots in genuine hyaline cartilage is not definitely proved," and undertook to settle the question. After many fruitless attempts he found out a method of examination "by which ramifying cells in hyaline cartilage can be demonstrated not only with ease, but also with certainty." The method and the results, as he has described them, are as follows: "The cartilage, best the articular ends of bones, is placed into alcohol for three or four days; then the sections are made and the examination is conducted in alcohol. From such specimens positive proof is obtained that the cells of hyaline cartilage have solid offshoots. These offshoots emanate mostly from the body of the shrivelled cells, penetrate the basis-substance, and inosculate with offshoots of other cells. Their number and thickness are subject to numerous variations. \* \* \* The cell offshoots do not, as a rule, ramify. \* \* \* Examination with powerful immersion lenses (Hartnack, No. 15) teaches positively that the cell offshoots not only pierce the capsule, but that the capsule extends also to the offshoots themselves, so that at their origin they are surrounded like the cell body by a wall. \* \* \* Upon adding a drop of

<sup>1</sup> *Loc. cit.*, p. 22.

<sup>2</sup> "Ueber die Saftbahnen des hyalinen Knorpels." Sitzungsber. der K. K. Akad. d. Wiss. in Wien, lxxx, Abth. iii, Nov., 1879.

glycerine to the alcohol specimen, or on staining it after one of the usual methods, the cell offshoots disappear more or less rapidly; hence, it is clear that the hyaline, structureless aspect of the cartilage basis-substance, is really due to the methods of preparation hitherto in use, while, when examined in alcohol, as above described, the cell offshoots invariably become visible." He added that he has succeeded a few times in seeing—faintly only, it is true—the same structure in living hyaline cartilages. On incorporating, for a sufficient length of time, carmine into the body of frogs, Spina found cartilage corpuscles of which the nuclei, the body, and the offshoots had taken in some of the coloring matter. As the offshoots disappeared and the carmine granules seemed to lie in the hyaline basis-substance when a drop of glycerine was added, it is easy to see how previous investigators came to be misled into supposing the coloring matter to have passed into the hyaline substance, and into interfibrillar fissures. With excessive caution, Spina adds: "Whether they (the coloring particles) can also move along outside of the cell offshoots has not yet been proved."

In the same year Prudden,<sup>1</sup> and, in 1880, Flesch,<sup>2</sup> also described cilia-like processes of cartilage corpuscles; and the latter admitted that in exceptional cases he had succeeded in tracing them more or less distinctly into the basis-substance.

## SECTION II.—*Personal Investigation.*

I. Having, as already detailed, familiarized myself with the investigation of cartilage tissue, I entered upon the examination of the laryngeal cartilages. Of the many specimens examined, I shall now describe a few of the thyroid. Longitudinal sections through the lateral plates of the thyroid cartilage of a man of about 25 years, hardened in chromic acid and stained with an ammoniacal carmine solution, exhibit with low powers of the microscope (150 to 200

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<sup>1</sup> "Beobachtungen am lebenden Knorpel." *Virchow's Archiv*, lxxv, 1879, p. 185.

<sup>2</sup> *Loc. cit.*, pp. 59-63.

diam.) the following: The cartilage corpuscles, either single, in pairs, or in groups of from three to six, or even more, are imbedded in a basis-substance which, for the most part, is homogeneous-looking or indistinctly granular, but in some portions finely striated. The homogeneous or indistinctly granular-looking basis-substance is that which bears the name hyaline basis-substance; the striated is termed fibrous, although actual fibrillæ appear only on the edges of the specimen, or when the tissue is torn and mutilated. The fibrous basis-substance is intermixed, without any regularity, with the hyaline, and usually sharply separated from it. Not infrequently a number of cartilage corpuscles, or groups of cartilage corpuscles, are surrounded by fibrous basis-substance, the striations of which run, as a rule, in a sagittal direction, *i.e.*, vertical to the surface. Within the fibrous basis-substance the cartilage corpuscles are at most points sparsely scattered or absent; here and there, however, they are more numerous, in rows or elongated, corresponding to the direction of the striations. It also occurs that striated portions of the basis-substance contain very minute globular or oblong corpuscles, sometimes to such an extent that the striated structure is concealed by the large number of these corpuscles.

Fig. 1 exhibits the appearance of the constituent parts, with an amplification of 100 diam. The fibrous portion is seen to occupy the centre of a longitudinal section of one of the plates of the thyroid cartilage. This is not regularly the case in every cut, and was exceptionally well marked in the section from which the drawing was made. In some sections the fibrous cartilage is altogether absent, but every laryngeal cartilage contains some fibrous mixed with hyaline portions. *A*, perichondrium toward the mucous membrane. *B*, perichondrium toward the skin. *F*, fibrous portion of cartilage. *H*, hyaline portion of cartilage.

Under higher magnifying powers (500 to 600 diam.) single cartilage corpuscles exhibit features, frequently before described, with coarsely granular nuclei. Around the nucleus finer granules are visible. At the periphery of the cartilage corpuscle there are several strata of higher refracting power, especially the zone nearest the basis-substance, which, as a

rule, appears very shining and is what is termed the capsule of the cartilage corpuscle. Not infrequently the cartilage corpuscle is very indistinct, being but slightly more granular than the surrounding basis-substance; then almost nothing but the nucleus marks its presence and its place. In twin formations of cartilage corpuscles, which are often met with, the zone of division between the two corpuscles is identical with that surrounding both, in the shape of a capsule. Of the same nature are the zones of division that are seen in clusters of cartilage corpuscles.

The so-called hyaline basis-substance throughout its whole extent now appears finely granular; as a rule, the granulation is more distinct midway between the corpuscles than in their immediate vicinity. The fibrous portions of the basis-substance are seen to be made up of extremely minute spindles, which, by being grouped longitudinally, produce the aspect of striation. The spindles or fibres are separated from each other by light rims, and both the spindles and the rims look finely granular. Between the spindles may often be seen small globular bodies, sometimes scattered, sometimes in clusters, of which the size and shape greatly vary, reaching occasionally the size and shape of a regular cartilage corpuscle. In some striated fields blood-vessels, both arterial and capillary, can be seen; the former with the characteristic muscle-coat, the latter with the endothelial wall, besides holding red blood corpuscles in their calibres.

Fig. 2, representing the fibrous portion of thyroid cartilage amplified 600 diam., shows *C*, a cartilage corpuscle surrounded by a dense basis-substance; *G*, granules of living matter in a dense fibrous structure; *B*, a capillary blood-vessel; and *V*, a small vein.

The highest powers of the microscope (1000 to 1200 diam.) reveal the reticular structure of cartilage corpuscles, as it is known since 1873. All granules within the nucleus and all granules within the corpuscle are uninterruptedly connected by delicate threads. The intranuclear network is connected with the corpuscular reticulum by radiating conical spokes traversing the light rim around the nucleus;

and, at the periphery of the corpuscle, similar conical spokes pierce a narrow light rim and enter the basis-substance, in which, especially in the highly refracting zone, termed capsule, they are usually lost to sight. Cartilage corpuscles even which have become so pale as to leave only a dim trace of their former contour visible, still exhibit more or less distinct traces of the reticular structure.

The same structure may be seen throughout the so-called hyaline basis-substance—more distinct in the middle of the space between the corpuscles than immediately around the corpuscles themselves. The fibrous portion of the basis-substance has also a reticular structure. The bodies of the slender spindles show a network without the application of any reagent, and the light rims between the spindles are traversed by delicate threads running in a vertical direction to the longitudinal diameter of the spindles. All granules and lumps scattered through the fibrous basis-substance are surrounded by light rims, which are pierced by conical spokes inosculating with the reticulum of the neighboring spindles.

The reticular structure of cartilage corpuscles, *CC*, twin-formations; the indistinct reticulum in hyaline basis-substance, *B*; and a number of small granules of living matter in fibrous basis-substance, *F*, the spindles and granules being connected by fine threads, are exhibited in fig. 3 which represents a sagittal section of the thyroid cartilage of an adult amplified 1200 diam.

I have treated sections of the same cartilage after they had for several days been washed out with distilled water, with a one-half-per-cent. solution of gold chloride, whereupon they assumed a dark purple color, and showed all the features described, somewhat more distinctly than simple carmine preparations. I deem their detailed description unnecessary.

II. When I became acquainted with Spina's researches, cited in my historical sketch, I deemed it of importance to repeat the examination according to his method. I therefore placed a larynx immediately after removal from the body of a girl, aged 24 years, into strong alcohol, and after four days made thin sections from the thyroid cartilage in

a horizontal direction, transferred them in alcohol to the slide, and examined them with both low and high powers, adding from time to time a drop of strong alcohol to prevent the specimen from drying. The appearance presented by such a specimen is truly surprising. As a matter of course, the cartilage corpuscles are shrivelled up so that more or less space is left between their jagged periphery and the border of the basis-substance. With an amplification of 500 diam., the basis-substance is seen pierced by light filaments, which, in many instances, can be traced through the intervening space into the body of the cartilage corpuscle. Most of these filaments radiate around the corpuscle, and immediately after penetrating the basis-substance, diverge and form a reticulum throughout its extent. Cartilage corpuscles located near each other, are directly connected by non-ramifying and occasionally by ramifying offshoots, or by bundles of such offshoots of a more or less parallel course. The reticulum in the basis substance is either radiating or irregularly arranged around the corpuscle. Contrary to the assertion of Spina, the filaments or offshoots do, as a rule, ramify, except those that directly connect the neighboring corpuscles. Sometimes thick bundles of offshoots emanate from opposite poles of the corpuscles, while intervening portions of the periphery are almost devoid of offshoots. Toward the periphery of the thyroid cartilage,—where, as is well known, the cartilage corpuscles elongate, becoming smaller and spindle-shaped and more or less parallel to each other,—the offshoots are given off rectangularly to the axis of the corpuscles.

High magnifying powers, immersion lenses No. 10 and No. 12, conclusively prove the connection of the offshoots with the cartilage corpuscles. Portions of the basis-substance which, with lower powers, looked only granular, now show a delicate reticulum, which, even when coarser offshoots are wanting, is connected with the cartilage corpuscle through delicate, and more or less conical, offshoots from the surface of the corpuscle.

The light interstices between the fibres of striated basis-substance, are also traversed by delicate grayish thorns.

Such thorns are visible even in the perichondrium. Through the fibrous bundles of the perichondrium run in a nearly rectangular direction, delicate light streaks, while the interstices between the bundles and the spaces left between the corpuscular elements and the bundles, exhibit delicate conical grayish threads, the direction of which corresponds to these light streaks.

The highest powers of the microscope disclosed in one of the specimens examined another feature in the hyaline basis-substance, viz., the presence of a number of granules or minute lumps of varying shape, some interwoven with the direct offshoots of the corpuscles, and some with the threads forming the finer network of the basis-substance. They appeared to be thickened points of intersection, knots or nodes, composed of the same material as the offshoots and threads themselves. They were unquestionably granules of living matter. I found their greatest development in a case examined without Spina's method, a case which I shall describe presently. Fig. 4 shows a horizontal section of a thyroid cartilage, which was hardened in alcohol and examined by the method of Spina, with an amplification of 1200 diam. *C*, shrivelled cartilage corpuscle; *O*, longitudinal offshoots connecting cartilage corpuscles; *R*, reticulum in the hyaline basis-substance; *G*, granules of living matter, which are seen to be part and parcel of the reticulum.

III. The observation which I am now about to record, was made in specimens of the thyroid cartilage removed from the body of a rather stout man, 48 years old. After having been hardened in chromic acid solution, without any other reagent, they exhibited formations in the basis-substance which, so far as I am aware, have never before been described. I have alluded to them as found in one of the specimens examined, with the highest powers of the microscope, by the alcohol method of Spina. These formations are shown in fig. 5, with an amplification of 600, and in fig. 6, with an amplification of 1200 diameters.

As to the cartilage corpuscles in these specimens, many of them were larger and more coarsely granular than are commonly observed: otherwise, their characters and the arrange-

ments of the basis-substance, both so-called hyaline and fibrous, were like those described before. The intranuclear, intracorpuscular, and intercorpuscular networks were with high powers well shown.

The very remarkable feature was that with quite low power the basis-substance was seen to be speckled and studded with granules or lumps varying from that of a point at the limit of the visible to that approaching the dimensions of a regular cartilage corpuscle. Of course, no one must for a moment think of any thing like the pathological conditions that have been described either as granular degenerations of the cartilage basis-substance, or as incrustations of the corpuscles. Not only were the appearances entirely different and the cartilage healthy—as otherwise ascertainable as well as from the known condition of the man and of the cause of his death—but the true nature of the lumps was made perfectly clear by examination with higher powers.

When magnified to the extent of 600 diameters, the same relative appearance was preserved. The lumps in the basis-substance still varied in size from the limit of the visible to the magnitude of ordinary cartilage corpuscles; but in all the larger lumps, differentiations were visible which approached them in structure as well as in size to cartilage corpuscles. In some, one or more vacuoles, in others, a small or large nucleus, or even two nuclei, could be made out; and a few (*i. e.*, occasionally one in some fields) showed irregular twin, or even triplet formation.

The highest power threw a wonderful light upon these lumps. They were seen to be masses of living matter. The larger showed a network in their interior, some without and some with a nucleus, and the latter, when present, was sometimes homogeneous and sometimes reticulated. All the lumps, except the smaller, were surrounded by a distinct light seam, through which radiating conical offshoots passed to the network in the basis-substance; and all of them, even the smallest, sent delicate offshoots connecting them with that network, or were themselves part and parcel (*i. e.*, thickened points of intersection of the threads) of that network.

After having studied such a specimen, it was easy to interpret correctly the intrareticular granules seen in the alcohol specimen represented in fig. 4.

Fig. 5 shows a horizontal section of the thyroid cartilage of a robust, rather stout man, 48 years old, amplified 600 diam. *C C*, cartilage corpuscles; *G*, granules or lumps scattered through the hyaline basis-substance; *F*, fibrous portion of cartilage.

Fig. 6 shows a field of the same specimen with an amplification of 1200 diam. *C*, cartilage corpuscle with distinct reticular structure surrounded by a dense basis-substance, the so-called capsule; *B*, hyaline basis-substance with faint reticular structure; *G*, granules or lumps scattered through the hyaline basis-substance, connected with its reticulum.

*In order to present all the Laryngological Proceedings of the International Medical Congress in the present number of the Archives, the publication of the remainder of this paper has to be postponed to the next number.—ED.*

# TRANSACTIONS OF SOCIETIES.

## PROCEEDINGS

OF THE

SUBSECTION

—DISEASES OF THE THROAT—

OF THE

SEVENTH INTERNATIONAL MEDICAL CONGRESS,

HELD IN LONDON, AUGUST 2D-9TH, 1881.\*

By FELIX SEMON, M.D., M. R. C. P., LONDON,

SECRETARY OF THE SUBSECTION.

“Both in the number of those present at the meetings and in the distinguished position occupied in the medical world by those who took part in the discussions, the Subsection for Diseases of the Throat may certainly be considered as one of the most successful departments of the Congress.” These are the words with which the London *Lancet*<sup>1</sup> introduced its report of the proceedings of the Subsection. On reviewing the whole spirit and the results of our proceedings, the esteemed journal might have added that these discussions were equally distinguished by vivacity and by general usefulness ; and there is no doubt but that the leading contemporary would certainly have congratulated the laryngologists on their scientific successes as well, had pressure of space permitted it to do so ; for it is but just to record, that no greater unanimity concerning the desirability, nay the *necessity* of a special department for affections of the throat and nose could have been shown, nor a more generous and hearty acknowledgment of the

\* As promised in the ARCHIVES, p. 292, we present our readers with a report of Laryngological Proceedings at the International Congress. It has been specially prepared for us by the Secretary, and we are assured that it is the completest that will appear outside of the official volume of Transactions of the Congress. As that necessarily extensive volume will probably contain abstracts only of the papers submitted, it is proposed to bring out a separate volume for the Laryngological Subsection, and, certainly, the valuable material presented would amply justify such a publication. If this proposition is not carried out, we shall probably be enabled to lay before our readers some of the original papers in detail.

ED.

<sup>1</sup> *The Lancet*, August 13, 1881, p. 302.

success of the Laryngological Subsection been manifested, than that accorded to it by the unanimous agreement of the bulk of the profession.

It must not be forgotten that though this was already the seventh International Medical Congress, yet no recognition had hitherto been accorded to Laryngology; and manifold and great have been the difficulties of getting such a first recognition in the very country in which the claims of Laryngology have perhaps been least recognized. The success, however, attending the experiment was complete, and we may fairly express our firm conviction, that Laryngology has at last gained a firm footing among the recognized medical specialties. This must be recorded as the first fruit of the Congress just closed. In one of the meetings, in the presence of nearly one hundred distinguished laryngologists, the *unanimous* opinion found expression, that in view of the recognition now obtained at the hands of the profession in general, and in view of the fact that too frequent a repetition of International Congresses is apt to lead to a degeneration of such gatherings, it was desirable, that the idea of holding a second *independent* special Laryngological Congress next year at Paris (as decided last year at Milan) should be completely abandoned. Nothing could be more important or significant, the reporter thinks, as showing the good sense of specialists themselves, than their appreciation of the great danger of isolation; nothing could be more pleasing than the *unanimity of their opinion that as long as we remain in close contact with our common great science, we will be, through the force of truth and the natural development of the mutual advantages to both specialism and general medicine, as invincible as was the giant Antæus while in contact with his mother Gæa; but that as soon as we forget this truth, as soon as we are led astray by a false ambition to claim an isolated, absolutely independent position, no Hercules will be needed to crush us; our own imprudence will do the work for him!* The reporter apologizes for venturing to intrude opinions upon the readers of a report intended to be thoroughly objective; he hopes, however, that this strong statement of what may be considered to be the basis of sound specialism and was enthusiastically approved of as such by all who were present, may, as characterizing the spirit of our proceedings, not be unwelcome to those of our fellow-specialists who were unfortunately prevented from being with us. It has but one purpose, viz., to improve the position of our specialty itself, and to increase esteem for it in the eyes of the

profession. What has been accomplished is certainly encouraging for those who, when the next occasion offers itself, will endeavor to secure for Laryngology the same position which is accorded to the most favored other specialty, and which this branch of our common science has, we trust, amply shown itself to deserve during this Congress.

The Subsection for Diseases of the Throat, which met in the room of the Astronomical Society, Burlington House, was presided over by Dr. George Johnson, F.R.S., in whose unavoidable absence on two mornings, the chair was occupied by Prof. Krishaber (Paris) and Prof. Schnitzler (Vienna) alternatively on the first, and by Dr. Solis-Cohen (Philadelphia) and Dr. Meyer (Kopenhagen) on the second occasion. Drs. F. De Havilland Hall (London), Felix Semon (London), and Thomas James Walker (Peterborough), acted throughout as Secretaries. Altogether three hundred and forty-two gentlemen inscribed their names as members of the Subsection; the average number of attendance varied from about 60 to 100. Among the 342 members were, *as far as could be ascertained*, 116 Englishmen, and 116 foreigners, viz.: 35 Germans, 30 Americans, 15 Frenchmen, 13 Spaniards and South Americans, 7 Belgians, 6 Russians and Poles, 6 Italians, and 4 Austrians. Of the remaining 110, who either belong to other nations than those mentioned, or whose nationality could not be ascertained, by far the greater number must from their names be supposed to be Englishmen and Americans. All countries known to take an active interest in Laryngology were amply represented. Of the individual names best known to laryngologists, we may cite the following in alphabetical order (without, however, pretending that this list is by any means a complete one), viz.: Messrs. Cresswell Baber (Brighton), Bayer (Brussels), Böcker (Berlin), Bosworth (New York), Lennox Browne (London), Burow (Königsberg), Cadier (Paris), Capart (Brussels), Caselli (Reggio-Emilia), Solis-Cohen (Philadelphia), Czerny (Heidelberg), Fauvel (Paris), Foulis (Glasgow), Fournié (Paris), B. Fränkel (Berlin), E. Fränkel (Hamburg), Kendal Franks (Dublin), Manuel Garcia (London), Gerhardt (Würzburg), Gottstein (Breslau), Gouguenheim (Paris), Guye (Amsterdam), Hayes (Dublin), Hemming (Bournemouth), Hering (Warsaw), Hopmann (Cologne), Prosser James (London), Jurasz (Heidelberg), Paul Koch (Luxemburg), Krishaber (Paris), Ladreit de Lacharrière (Paris), Lefferts (New York), R. P. Lincoln (New

York), Loewenberg (Paris), Morell Mackenzie (London), W. Meyer (Kopenhagen), Michel (Cologne), Moure (Bordeaux), Poore (London), Reyher (St. Petersburg), Rosenbach (Breslau), Rossbach (Würzburg), Sanné (Paris), Schäffer (Bremen), Schiffers (Liège), Schnitzler (Vienna), Schottelius (Giessen), Semple (London), Tornwaldt (Dantzic), Voltolini (Breslau), Spencer Watson (London), Whistler (London), Woakes (London).

Several more of the most eminent laryngologists, notably Messrs. Beschorner (Dresden), Chiari (Vienna), Elsberg (New York), Lewin (Berlin), Oertel (Munich), Schech (Munich), Schmidt (Frankfort), Smyly (Dublin), Tobold (Berlin), v. Ziemssen (Munich), were at the last moment prevented from being present, as they had intended and promised ; and most sad to record, two of the prominent pioneers of our science, who had gladly looked forward to the Congress, and had been most anxious to attend, viz., our late lamented friends, Waldenburg, of Berlin, and Mandl, of Paris, were taken away by the hand of death before the time of our meeting had arrived.

The total number of papers sent in and accepted by the Committee and Council of the Subsection, amounted to 38, 30 of which related to questions suggested for discussion by the officers of the Subsection (20 introductory papers and 10 voluntary contributions) and 8 of which treated of entirely independent subjects. Thirty-one of these papers were actually read, 2 of them by substitutes, and 7 were, in the absence of the authors, passed as read. The abstracts of all these 38 papers had been previously translated into the three official languages of the Congress by the Secretaries (Dr. Eugene Eeman, of Ghent, having very kindly volunteered to translate all papers written in the English and German languages into French), printed, and put into the hands of members before the beginning of the Congress. They fill 60 printed pages (pp. 155-215) in the volume of abstracts of the Congress, which contains 719 pages altogether.

The number of meetings of the Subsection amounted to eight. Of these five were morning sessions, devoted to the discussion of the questions suggested by the officers of the Subsection, and occupying three hours each, while there were three shorter afternoon sessions devoted to the Chairman's address, and to the discussion of independent subjects. Moreover, two afternoons were given to demonstrations of all kinds. These demonstrations, which took place in the Hospital for Diseases of the Throat and Chest,

formed an important feature of the work of the Subsection. Upon the whole, 50 different speakers addressed the Subsection, by whom altogether 126 speeches were delivered, of which there were in German, 60, in English, 53, and in French, 13, the whole speaking time, exclusive of the demonstrations, amounting to about eighteen hours, which gives an average of  $8\frac{1}{2}$  minutes for each speech.

*First meeting of the Subsection, Wednesday, Aug. 3d, at 3 p.m.,*

Dr. GEORGE JOHNSON, F. R. S., in the chair.

The Chairman read a short but impressive inaugural address, in which he most happily compared the advantages conferred upon medicine in general by the ophthalmoscope and laryngoscope respectively, and in which, while admitting that the former might perhaps in the matter of mere diagnosis take precedence of the Laryngoscope, he claimed for the latter greater usefulness so far as treatment is concerned. Dr. Johnson closed by defending the specialist against the frequent accusation of his being of necessity unacquainted with all other diseases. "We, on the other hand," he said, "maintain that of the specialist it should be said with truth, that he is one, not who knows less of disease in general, but who knows more of the particular class of disease to which he has devoted most time and especial attention and study."

The Chairman's eloquent address was followed by a most touching and truly historical incident, the thanks for which are due to our respected and beloved President, Sir James Paget, who, in a most charming letter to the Reporter, had suggested that opportunity should be given to the laryngologists of the world to hear from the lips of the inventor (as he may fairly be called) of the laryngoscope, viz., Signor Manuel Garcia, the history of his invention. Signor Garcia (who, moreover, as an M.D., *honoris causâ*, of the University of Königsberg, was a fully privileged member of the Congress) at once cordially agreed to this request. He related, in the most simple and modest manner, how the idea of observing his own larynx originated with him. No one, we are sure, who had the privilege of being present on that afternoon, will ever forget how, with a voice trembling from emotion, the venerable old gentleman told us, that after many futile attempts, he strolled one afternoon in the courts of the Palais Royal, in Paris, meditating on the problem, when suddenly his mind's eye saw *the*

*two mirrors in position* ; how he at once went to Charrière, the instrument-maker, bought an old dentist's mirror with a long handle, and availing himself of the light of the sun, succeeded *on the first attempt* in seeing a part of his larynx !

The paper, which was listened to in breathless silence and finally enthusiastically applauded, contained, moreover, some very interesting observations on the anatomy of the thyro-arytæoid muscle, the unequal length of the fibres of which explains, in Signor Garcia's opinion, in part, the formation of different notes, the shortest alone contracting for the deepest, and successive fibres coming into play, accumulatively, as the voice ascends.

Dr. VIVIAN POORE, of London, then read notes of a remarkable case of a web in the larynx, probably congenital. (The case was demonstrated on Thursday afternoon.) Drs. Solis-Cohen, Böcker, and Prof. Schnitzler took part in the discussion, and described cases of membranous adhesion between the halves of the larynx, which they had observed.

Dr. SOLIS-COHEN thought that the origin of these cases was more probably due to an irritative process in foetal than extra-uterine life.

The last paper read on that afternoon was one by Dr. Rumbold, of St. Louis, maintaining that the spray-producer, as the spray penetrates to the most concealed parts of the diseased surface, and causes at the same time no irritation whatsoever, was the best plan of making applications to the superior portions of the respiratory tract. No discussion followed this paper.

*Second meeting, Thursday, Aug. 4th, at 10 a.m.,*

Dr. GEORGE JOHNSON in the chair.

Dr. MORELL MACKENZIE opened the discussion on "Local treatment of diphtheria" by an introductory paper, in which he stated that, with the exception of ice in the first stages, of disinfectants and of steam-inhalations (to which solvents may be advantageously added) at the time when the false membranes begin to separate, he availed himself now, for purposes of local medication exclusively, of varnishes, *i. e.*, æthereal solutions of tolu, which, locally applied, exclude the air from the false membrane. He further declared that, in his belief, caustics were always injurious.<sup>1</sup>

<sup>1</sup> It is obvious, that in this report only the *most prominent features* of the papers read and speeches made can be mentioned. Of several of the papers, moreover, only parts were actually read, on account of their great length, and

Dr. TOBOLD, of Berlin, on whom the honor of reading the other introductory paper on this subject had been conferred, not being present, and his paper not having been sent in, the members were referred to the abstracts for a short résumé of his views, which nearly coincide with those of Dr. Mackenzie, as far as ice, steam, solvents, disinfectants, and caustics are concerned.

Mr. LENNOX BROWNE, in a short paper, recommended ice, lactic acid, and chlorate of potash, and advocated the removal of enlarged tonsils, if they interfered with free respiration, even during an attack of diphtheria.

The subsequent discussion, in which Dr. Meyer (Kopenhagen), Prof. Burow (Königsberg), Dr. Böcker (Berlin), Dr. Solis-Cohen (Philadelphia), Dr. E. Fränkel (Hamburg), Dr. Rothe (Altenburg), Dr. Prosser James (London), and Dr. Johnson (Chicago) took part, showed an almost general agreement as to the injurious effects of forcible removal of false membranes and of the use of caustics; the only marked opposition being offered (through Dr. Meyer) by a Danish practitioner, Dr. Nix, who reported excellent results obtained in a large number of cases by scraping away the false membrane and cauterizing the underlying surface with solid nitrate of silver. It further became evident, that Dr. Mackenzie's plan of employing varnishes had as yet scarcely been tried on a large scale, and that most practitioners still relied on ice, steam-inhalations, antiseptic sprays, lactic acid, and lime-water.

Moreover, it might be mentioned that Prof. Burow warned surgeons against employing the mouth for sucking in making aspirations, often necessary after tracheotomy for diphtheria, and advised the use of catheters and syringes for this purpose; that Dr. Solis-Cohen recommended the local use of iced clothes over the neck and up to the ears as an excitant of the respiratory nerve-centres; that Dr. E. Fränkel made observations on the treatment by pilocarpine, which effected, it was true, a separation of the false membrane, but did not influence the general course of the disease, stating at the same time his conviction that there was often a great discrepancy between the local symptoms and the general affection; and that Dr. Prosser James spoke against the use of all mercurial preparations, including the cyanide of mercury.

Dr. MORELL MACKENZIE replied, summing up the discussion, and again recommending a trial with the varnishes, which, in his hands, had yielded very good results.

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the short time at our disposal. A fuller report will appear in the Transactions of the Congress.

F. S.

The next discussion was that on "Pathology of laryngeal phthisis."

The introductory papers—by Prof. Krishaber, of Paris, and Prof. Rossbach, of Würzburg—disclosed the great difference of opinion existing with regard to this most important disease among laryngologists themselves. Although both these gentlemen duly dwelt upon the nature and etiology of laryngeal phthisis, yet those points seemed to receive most attention on which their opinions most differed, and which formed almost exclusively the subjects of the subsequent extremely interesting and lively discussion, viz., the questions: (1) whether it is possible or not to diagnosticate with certainty laryngeal phthisis by the aid of the laryngoscope alone; (2) whether there is a *primary* laryngeal phthisis; (3) whether the affection is curable or not.

Prof. KRISHABER believes that the diagnosis, with the aid of the laryngoscope, is very easy, and that only a temporary confusion with syphilitic laryngitis in a few cases would be pardonable; that the existence of a primary laryngeal phthisis is very doubtful; and that, though local cicatrization is possible, the disease is not a curable one in the strict sense of the word, *i. e.*, curable by local applications or other remedies known to us.

Prof. ROSSBACH, while speaking much more confidently of the existence of a primary laryngeal phthisis, stated, on the other hand, that the certain diagnosis of laryngeal consumption was only possible if pulmonary phthisis was simultaneously present; admitted, however, the great aid afforded by the mirror in helping to detect at an early period imminent or occult pulmonary disease; and in conclusion said positively: "Laryngeal phthisis is extraordinarily obstinate and difficult to treat, but not incurable."

Such antagonistic statements showed that the object of the Committee in asking two gentlemen to introduce the discussion, viz., of obtaining a good basis for the debates, had been completely accomplished in this instance. Though not very many speakers took part in the discussion, the contest was a very severe one.

The Chairman spoke of the possibility of simple or purulent laryngeal secretions setting up changes in the bronchi and air-cells, when carried thither by inspiration.

Dr. B. FRÄNKEL, of Berlin, insisted that we should make the diagnosis from the laryngeal appearances alone, without waiting for pulmonary complications, and stated positively that he had seen cases of primary phthisis of the larynx.

Prof. SCHNITZLER, of Vienna, fully corroborated the first opinion of the last speaker, viz., that concerning the diagnosis, but considered the existence of a primary laryngeal phthisis somewhat doubtful, adding that he believes in the curability of the affection.

Prof. VOLTOLINI, of Breslau, much doubted the occurrence of a primary laryngeal phthisis.

Dr. CADIER, of Paris, thought that the disease is curable.

Dr. E. FRÄNKEL, of Hamburg, joined in this view from the position of a clinician as well as that of a pathological anatomist, but said that it was impossible to decide whether a primary laryngeal phthisis existed or not, inasmuch as even the apparent absence of pulmonary changes did not positively prove that the lungs were really intact.

Prof. GERHARDT, of Würzburg, in a much-admired and truly ethical speech, sought to reconcile the antagonistic views; he reminded laryngologists that laryngeal phthisis is one of the most formidable and at the same time frequent diseases they have to contend with, and begged them to let it be their aim to so study and treat it that it will certainly soon be registered under the head of curable affections, a position which the kindred pulmonary affection has now at last attained.

In summing up, Prof. Krishaber stated that his conviction, that all local remedies hitherto in use did not improve but rather deteriorate the condition, was not a theoretical one, but was based upon a long, serious, and faithful trial of all methods known to him. He would not say that laryngeal phthisis was incurable, but meant to imply that all known local therapeutic means had no good effects.

In opposition to this statement, Prof. Rossbach briefly replied that one positive case was of greater value than a thousand negative ones, and that having convinced himself in several instances of lasting cures having been effected, the curability of the affection was for him beyond doubt. This brought the discussion and the morning meeting to an end.

Thursday afternoon was devoted to demonstrations of patients, operations, specimens, instruments, illuminating apparatus, etc., which took place at the Hospital for Diseases of the Throat and Chest, Golden Square. The demonstrations were so numerous attended that the accommodation was scarcely sufficient.

Dr. FELIX SEMON showed a probably unique series of five cases of bilateral paralysis of the glottis-openers, *i. e.*, the posterior crico-

arytenoid muscles, one of which was complicated by an ankylosis of the right crico-arytenoid joint, which had several months later been superadded to the already existing neurotic disorder. He briefly related the history of each case, dwelt upon the fact that the disease was in some instances of central, in others of peripheral origin, and insisted on the necessity of early tracheotomy, if the dyspnoea was in any degree considerable, and if not, *soon* an *objective* widening of the glottis could be effected by other means. He also showed a very interesting case of probably congenital ankylosis of the left crico-arytenoid articulation with *atrophy* of the corresponding vocal cord occurring in a woman, æt. 30, the subject of congenital syphilis.<sup>1</sup>

Dr. MORELL MACKENZIE sent one patient, on whom he had performed internal œsophagotomy (the instrument used was also shown), and another suffering from that very rare and obscure disease: spasm of the tensors of the vocal cords, called also "stammering of the vocal cords."

Dr. W. MACNEILL WHISTLER (London) presented a patient with syphilitic stenosis of the pharynx, in whom he had established a connection between the pharynx and the posterior nares.

Dr. V. POORE showed the patient with the web in the larynx, who had formed the subject of his communication on the previous day.

Dr. MICHEL, of Cologne, demonstrated his method of removing adenoid vegetations from the vault of the pharynx, by means of the galvano-caustic loop.

Dr. FOULIS, of Glasgow, exhibited the two larynges of the patients in whom he had performed total extirpation of the larynx.

Prof. KRISHABER showed his improved tracheotomy-tubes, stating that there is, according to his measurements, a definite relation between the height of the body and the diameter of the trachea. If, therefore, the different sizes of the tubes were exactly numbered corresponding to the height of the body, and if a general agreement in this respect could be arrived at, it would be easy for provincial surgeons to order properly-sized tubes for their patients from instrument-makers living at a distance, by simply stating the patient's exact height.

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<sup>1</sup> The case will shortly be published *in extenso*. It might be stated that a sixth patient with bilateral paralysis of the abductors, who was expected, did not attend, simply because the letter requesting her presence had been misdirected.

Dr. MORELL MACKENZIE's and Prof. STOERK's (of Vienna) œsophagoscopes were shown.

Dr. B. FRÄNKEL, of Berlin, exhibited an ingenious modification of Whitehead's mouth-dilator,<sup>1</sup> to which he has added a tongue-depressor and a self-retaining Voltolini's palate-hook. The instrument was demonstrated *in situ* on a non-trained subject, and created general admiration, permitting, as it did, of an absolutely free inspection of the naso-pharyngeal cavity. Dr. Fränkel also showed prisms for inspecting the different cavities of the body.

Dr. FOULIS showed instruments used in removing the larynx, artificial larynges of different descriptions, and an apparatus for heating the actual cautery, which he recommends instead of the galvano-cautery in certain cases of pharyngeal disease.

Dr. CRESSWELL BABER, of Brighton, and Mr. SPENCER WATSON, of London, showed self-retaining nasal specula; in addition, the former exhibited a snare, which could be fixed at any angle; the latter, other instruments for the treatment of diseases of the nose.

Dr. PROSSER JAMES, of London, showed a series of laryngeal instruments, each being forged out of one piece of solid steel.

Dr. BOSWORTH, of New York, showed a small improved snare, for the removal of nasal polypi, and recommended the use of Nro. 5 steel piano wire.

Dr. TORNWALDT, of Dantzic, showed a very neat little tampon to be filled with water for the gradual dilatation of laryngeal stenosis.

Dr. RUMBOLD, of St. Louis, showed his spray-producers.

Dr. CADIER, of Paris, exhibited his tube-laryngoscope.

As several other promised demonstrations could not take place, because the instruments to be shown had not arrived, it was decided to arrange a supplementary demonstration for Tuesday afternoon, August 9th.

*Third meeting of the Subsection, Friday, Aug. 5th, at 10 a.m.,*

Dr. GEORGE JOHNSON in the chair.

Prof. GERHARDT, of Würzburg, opened, with a masterly exposition, the discussion on "Laryngoscopic signs in connection with

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<sup>1</sup> The instrument modified by Dr. Fränkel is mine, not Dr. Whitehead's. Many years ago I lent Dr. Whitehead one of my mouth-dilators; he liked it so well after operating with it that he had one made, somewhat altered as to the tongue-depressor, by the instrument-makers, Messrs. Geo. Tieman & Co.; he got his name attached to it in the catalogue of that firm, and on that account his name has stuck to my mouth-dilator, even when manufactured without his alteration.

injuries or diseases of the motor nerves of the larynx." He justly remarked, that but a short time ago this field of observation appeared to be so completely worked out, that the questions in relation to the laryngoscopic signs of paralysis or paresis of the vocal cords seemed to be almost wholly solved (nothing but the innervation of the crico-thyroid muscle having remained open to discussion), when suddenly the discovery, that organic disease, both central and peripheral, involving the motor laryngeal nerves and acting slowly, paralyzed always *first* the *abductors*, showed us, that we had still much to learn in connection with this class of affections. Though arguing very philosophically his way toward all the possible explanations of this curious fact, the Professor earnestly warned against premature hypotheses, and held that the final explanation would much more likely come from careful further continued observations than from purely theoretical speculations.

Prof. G. M. LEFFERTS, of New York, who read the other introductory paper on this subject, began by proposing a new classification of motor neuroses of the larynx. He divided them into five great classes, and dwelt at length upon the second of them, viz.: the isolated paralysis of the abductors. He sought to explain the proclivity of these muscles to succumb to organic diseases by a certain inherent weakness, or susceptibility to pathological influences, which, in its turn, he ascribed to the feeble supply of motor force derived from external sources.

The Chairman opened the discussion by drawing attention to those cases of carefully observed bilateral paralysis of the recurrent laryngeal nerve, in which after death lesion of but *one* vagus nerve was detected. The only possible explanation in these cases was, that the irritation conveyed by the afferent fibres to the centre, there set up such disturbance as passing along the efferent nerves to both sides caused paralysis. He urged on the members in such cases in future to examine especially the *nerve-centres* of the pneumogastric, spinal accessory, and other nerves implicated.

Dr. ROSENBACH, of Breslau, explained the proclivity of the abductors by their being analogous to the extensor and abductor muscles of the rest of the body; all these were prone to be paralyzed first, when the cause of the paralysis was a general one; the adductors, on the other hand, were analogous in their action to sphincter muscles elsewhere, which experience showed become paralyzed last of all. He further contended that the inspiratory

stridor and still greater narrowing of the glottis during the act of inspiration, was due to a perverse innervation of the adductors, and maintained finally that paralysis of the recurrent nerve and cadaveric position of the vocal cord are not identical, unless one believes that the crico-thyroid muscle is also supplied by the recurrent laryngeal nerve.

Dr. FELIX SEMON began by referring to a remark of Dr. Rosenbach who had thanked Prof. Gerhardt for having saved a paper of his (Dr. Rosenbach's) from oblivion, saying that such oblivion was the fault of the writer himself. If gentlemen wrote nowadays important papers in *local* journals, which were not even kept in the largest medical libraries, they ought not to be astonished if their works were unknown even to those of their colleagues who took the greatest interest in the subject. In the great Records or "Jahrbücher," such papers were sometimes not reviewed at all, sometimes very late, sometimes very insufficiently. He therefore wished that those gentlemen who, for reasons of their own, published their important laryngological contributions in local papers, would, at least, send at once separate copies or "reprints" to such of their co-workers in the same field as were known to them. This idea was very favorably received. Then, turning to the subject under consideration, Dr. Semon said that he agreed with every word of Prof. Gerhardt, and especially that, although since the publication of his (Dr. Semon's) paper, which seemed to have given rise to the discussion on the proclivity of the abductor fibres to organic disease, he had had the opportunity of seeing a good many cases corroborating, and none contradicting, his statements concerning this proclivity, he nevertheless wished, with Prof. Gerhardt, to warn against premature conclusions from, and explanations of, this curious fact. The fact, however, must be admitted; and he would take occasion here to touch upon a point which, though not in exclusive connection with the subject to be discussed, yet was very opportune, and ought, under all circumstances, to be mentioned at a gathering of this unique character. He alluded to the question of medical criticism. Laryngological criticism had certainly, up to a very recent date, been mostly very objective, but there seemed to him to be growing a dangerous tendency, viz., that of doubting the accuracy and trustworthiness of observations of others, for the sole and simple reason, that the reviewer had not had the opportunity of making the same or similar observations! This tendency had become most noticeable in

connection with the question under consideration, the very occurrence of an isolated bilateral paralysis of the abductors being doubted up to the present moment by several authors. Now, he wished to say, that he had seen sixteen cases of that sort during the last five years, and, having given to the laryngologists of the world the opportunity of personally examining five of them together in the same room, he now trusted that there would be an end of discussing the question whether this form of paralysis occurred or not. But speaking quite generally, he would beg of all those confrères who undertook the responsible office of reviewer to be as severe as they liked in their criticism if they had any internal evidence of inaccuracy or untrustworthiness before them, but otherwise to extend the same charity—to use Sir James Paget's beautiful expression—to others, which they would wish for themselves. Finally, he suggested that the important subject of laryngeal motor neuroses should again be brought forward at the next International Congress.

Professor SCHNITZLER, of Vienna, who followed, considers hysterical paralysis to be due to functional central affection; agrees with Dr. Johnson's conclusions concerning cases of bilateral paralysis, in which the nerve of only one side is found affected; and thinks that bilateral paralysis of the recurrent nerve is not so frequent as one is led to suppose from the cases recorded in literature.

Dr. BOSWORTH, of New York, thought that Dr. Johnson's hypothesis explains many cases of bilateral paralysis of the abductors of peripheric origin, which were only clinically observed; as to the cases of central origin, he maintained the position taken in his recently published text-book.

Prof. BUROW, of Königsberg, said that he had had under observation nine or ten cases of bilateral paralysis of the abductor muscles; the two, which had been examined *post mortem*, had been of peripheric origin. He, too, warned against premature attempts at explanation, and stated his belief that the downward bulging of the inner borders of the vocal cords during inspiration in extreme cases, was a consequence of the rarefication of the air below; *i. e.*, due to negative pressure.

This very interesting discussion, which shows that the entire question is still a very obscure one, was then closed by Professors Gerhardt and Lefferts, both of whom, in very brief replies, urged the necessity of further study of the subject in a true scientific spirit.

Prof. SCHNITZLER, of Vienna, introduced the subject, of "Neurosis of sensation of the pharynx and larynx," by a short, mainly practical exposition of the present state of our knowledge of this class of affections.

Then followed the highly scientific and elaborate introductory paper of Prof. L. Elsberg, of New York, which was read for him, in his unavoidable absence, by Dr. Morell Mackenzie. The value of this excellent paper, which fills a great gap in laryngological literature, could unfortunately not be appreciated to its full extent by the members present, because its length allowed only of a rather fragmentary reading of the most important points. Suffice to say, that in the form of a complete monograph, it deals in a thoroughly methodical manner with a number of frequently occurring and important, totally distinct diseases, which the general practitioner nowadays is but too apt to confound under the one great name of "hysteria." Neurosis of sensation of the throat is defined to be disordered sensibility which is functional, and not merely subordinately symptomatic. It is assumed that there is in the medulla oblongata a certain sensory nucleus of the throat, which is designated and described. Having differentiated between three kinds of normal sensibility, viz., tactile, dolorous, and reflex, Prof. Elsberg divides disordered sensibility, or dysæsthesia, into three classes, viz., diminished, increased, and perverted sensibility, or hypæsthesia, hyperæsthesia, and paræsthesia, which clinically, singly, or in several combinations, involve the three kinds of sensitiveness. Anæsthesia is classed under the head of hypæsthesia; neuralgia under that of hyperalgesia, viz., hyperæsthesia (*i. e.*, increased sensibility) of the dolorous kind.

The subsequent discussion was but brief.

Dr. B. FRÄNKEL, of Berlin, objected to Prof. Schnitzler, that his paper did not quite agree with his (Schnitzler's) own "abstract" thereof. Dr. Fränkel would continue to distinguish very strictly between hyperæsthesia and paræsthesia of the throat; the latter (as was stated by Prof. Elsberg) was sometimes combined with anæsthesia. He was also of opinion that pharyngeal diseases were sometimes a cause of hypochondriasis, the latter disappearing with the cure of the former.

Dr. TORNWALDT, of Dantzic, maintained decidedly the existence of pharyngeal cough, produced by reflex action in cases of pharyngeal disease, especially of pharyngitis granulosa and of pharyngitis lateralis.

Dr. BAYER, of Brussels, would beg leave to refer, as far as this point was concerned, to his paper to be read on the same afternoon.

Prof. SCHNITZLER, in his reply, said that he had spoken from a clinical point of view, and that the finer distinctions of the single forms of sensory neuroses could often not be made in practice, as they frequently occurred mixed together.

The Subsection then adjourned.

*Fourth meeting, Friday, Aug. 5th, at 2 p.m.,*

Dr. GEORGE JOHNSON in the chair.

Prof. ROSSBACH, of Würzburg, made an extraordinarily interesting communication on "The physiological and pathological mucous secretion in the larynx and trachea, and contributions to the mode of action of expectorant and astringent remedies used in catarrhal processes of mucous membranes." From his experiments it would appear that the secretion in these parts is independent of central nerve influence, but depends exclusively upon peripheral nerve cells, situated within the mucous membrane itself. He also pointed out and explained, in accordance with the results of his experiments, the different action of some anti-catarrhal remedies upon the quantity and quality of the mucous secretion in the larynx and trachea, such as emetin, apomorphia, pilocarpine, alkalies, nitrate of silver, etc.

Dr. B. FRÄNKEL, of Berlin, said that the conditions of secretion in the nose and in the pharynx differed from those in the larynx and trachea, in so far as central nerve influence upon the secretion of the seriparous glands in the former parts had distinctly been shown to exist by Heidenhain. Dr. Fränkel, moreover, thought that the physiological moistening of mucous membranes ought to be strictly separated from catarrhal processes.

Prof. ROSSBACH admitted the difference of conditions between nose and pharynx on the one hand and larynx and trachea on the other, maintaining that there were no seriparous glands in the mucous membrane of the trachea; but he said that several of his experiments had so closely imitated the conditions of "catching cold," that he thought his conclusions with regard to actual catarrhal processes were quite justifiable.

Dr. BAYER, of Brussels, followed with a very industrious and complete disquisition on the "Influence of the female sexual appa-

ratus on the vocal organ and the formation of the voice." He considered this influence during the physiological state of menstruation as well as under the pathological conditions of the different sexual organs, and methodically detailed its different forms, distinguishing between the influence on the motor and sensory spheres and that on the whole organism (disorders of nutrition). A large part of the paper naturally dwelt upon the different forms of laryngeal hysteria and their dependence upon sexual disorders.

Drs. E. FRÄNKEL (Hamburg) and FELIX SEMON acknowledged the merits of Dr. Bayer's paper, but both considered it their duty to warn against the conclusion that the discovery of a sexual disease warranted us in giving a very sanguine prognosis as to the curability of an obstinate so-called "hysterical" laryngeal complaint. No doubt such complaints often disappear after an effective treatment of the diseased genital organs, but it was well to keep before our minds, that they often do not.

Dr. BAYER made no reply, and the meeting terminated.

*Fifth meeting of the Subsection, Saturday, Aug. 6th, at 10 a.m.,*

Prof. KRISHABER, of Paris, in the chair.

Dr. CH. FAUVEL, of Paris, opened the discussion on "Indications for extra- or intralaryngeal treatment of growths in the larynx," by an introductory paper, in which he maintained with great energy his well-known views on this question, viz. : that in almost all cases of benign neoplasms in the larynx in which operative interference is necessary, extralaryngeal operations—the dangers and inconveniences of which he described very pointedly—are to be rejected, and that the indications for endolaryngeal treatment form the general rule. In cases, however, which endanger life by suffocation, Dr. Fauvel admits prophylactic tracheotomy, which does not preclude subsequent removal *per vias naturales*.

Prof. BUROW, of Königsberg, who read the other introductory paper on this subject, although adopting the rule laid down by Paul Bruns, viz. : "That every benign laryngeal tumor ought, if possible, to be removed *per vias naturales* ; and that only if an experienced laryngologist has established the inexpediency of this method, may the extralaryngeal be adopted" ; and although warning, for many reasons stated, against the performance of thy-

rotomy if it could be avoided, nevertheless granted extralaryngeal operations a somewhat larger field than that conceded to them by Dr. Fauvel. Certain qualities of growths, such as broad bases, unusual consistency, origin in the ventricles, great size, multiplicity (as in papillomata), situation beneath the glottis, occurrence of several of them together, might, according to him, justify and even necessitate the performance of extralaryngeal operations, but even in such cases he thought sufficient persistency and suitable instruments in carrying out the intralaryngeal method might often overcome all difficulties. He much recommended, in proper cases, especially in subglottic tumors, the division of the crico-thyroid ligament, while subhyoid pharyngotomy was spoken of as a good means of approach to tumors of the upper laryngeal cavity. In children the endo-laryngeal method should always be tried first; if this proved impracticable, and dyspnoea be present, children from six to eight years old should be tracheotomized, and one or two years later operated on *per vias naturales*. In infants thyrotomy was to be practised, tracheotomy having been previously performed.

The very lively discussion revealed, above all, the fact, that although almost every speaker had some idea peculiar to himself about individual classes of growth and methods of operation, yet there was a general agreement as to the correctness of Paul Bruns' rule.

Prof. KRISHABER, who, as Chairman, opened the discussion proper, stated that endolaryngeal operations without the laryngeal mirror, but with the aid of the left index finger introduced into the child's larynx, were often much easier in the child than in the adult.

Dr. HOPMANN, of Cologne, agreed on the whole with Prof. Burow, but did not consider thyrotomy so serious an operation as it would seem according to the Professor's remarks. Dr. Hopmann quoted his own experience, embracing eight cases of thyrotomy, in support of this statement.

Dr. BÖCKER, of Berlin, cited several most instructive cases that had occurred in his own practice, which clearly demonstrated that, as far as recurrence is concerned, the extralaryngeal method is certainly not superior to the endolaryngeal one, and that but too frequently wholly unjustifiable extralaryngeal operations are performed. Incidentally he mentioned that in one of his cases of tracheotomy the tampon of the tampon-canula that was used

bulged in such a manner downward when inflated, that it wholly occluded the lumen of the tube and nearly suffocated the patient.

Dr. SOLIS-COHEN, of Philadelphia, detailed his personal experience in regard to laryngeal operations, which had been very varying at different periods of his career. For many years he had not had to perform a single thyrotomy, and then suddenly several in close succession. This had repeated itself twice, and showed, in his opinion, how wrong it was to draw conclusions from one's own practice alone. He feared that laryngologists sometimes converted innocent papillomata into epitheliomata by protracted manipulations continued too long. Often an extralaryngeal operation saved the patient from wearing his canula a long time, and from untoward consequences of this contingency, such as paralysis of the posterior crico-arytenoid muscles, granulations, etc. Subhyoid pharyngotomy had in one of his cases failed to give access to the growth.

Mr. LENNOX BROWNE, of London, thought, as the outcome of this discussion, the axiom could be enunciated, that the more dexterous the operator, the less frequent would extralaryngeal operations be. If, however, an extralaryngeal operation was decided on, it was useless to compromise with partial division of the thyroid cartilage.

Dr. MAX SCHAEFFER, of Bremen, communicated a case of most difficult thyrotomy, which had recently occurred in his practice, that had ended fatally on the third day after the operation from pulmonary complications.

Dr. FELIX SEMON said he would not take part in the discussion proper, but only briefly state the reasons which had induced the Committee of the Subsection to put a question on the programme which evidently seemed settled to many laryngologists. He begged to say that it was not so much intended for the laryngologists proper as for the medical public in general, and the *surgeons* especially, so that they might avail themselves of the discussion of this much-ventilated question. This was positively necessary. To give but one instance, it had been publicly stated only two years ago, that extralaryngeal operations had been performed repeatedly on one patient for the sole reason that it was really not easy to perform endolaryngeal ones! Such a *moral* could not be condemned strongly enough! The best good of the patient was the first and only thing to be considered, and if it was conceded that

without special training it was impossible (or, at any rate, dangerous to the patient) to adopt a method which was admittedly and undoubtedly the preferable one, then it followed *with absolute logical and moral necessity*, that such cases ought to be transferred to those specially trained !

(It is but right to record in the interest of a good cause, that this argumentation was received with general applause, showing the general agreement on this important point of those most competent to judge.)

Prof. LEFFERTS, of New York, would much rather support the moderate views of Prof. Burow than the extreme ones of Dr. Fauvel, but thought better of extralaryngeal operations than even the first-named gentleman. Thyrotomy, and even the so much repudiated partial thyrotomy, had in his hands yielded good results, and had never had bad effects. Another point on which he differed from Prof. Burow was, that if he had once made up his mind to open the air-passages of a child, he would not wait, as the Professor had proposed, some years for the removal of the growths *per vias naturales* ; but regarding, as he did, the first opening of the air-passages, *i. e.*, the tracheotomy, as the dangerous operation, he would prefer, under such circumstances, to complete the removal at once.

Dr. FAUVEL, in summing up, declared his complete agreement with Dr. Felix Semon's argumentation, and Prof. Burow closed by replying to some observations that had been made in the course of the discussion.

Before the beginning of the next discussion, Prof. Schnitzler, of Vienna, rose to bring before the Subsection the question mentioned in the commencement of this report, viz., whether a second independent International Laryngological Congress should be held next year at Paris, as decided at the first Laryngological Congress, held last year at Milan. The Professor proposed that this idea should be abandoned.

Dr. FELIX SEMON said that no one could more gladly welcome, than he did, a proposition of this character. At the same time, however, he begged to draw attention to the fact that this Subsection, not being the successor of the Laryngological Congress of Milan, had no right to adopt any resolution contrary to the decision of that Congress. He therefore begged to suggest that the individual members might simply manifest their opinion by accla-

mation as to the desirability or undesirability of further specialistic Congresses.

Dr. B. FRÄNKEL, of Berlin, fully agreed to this proposition, but wished that before the opinion of the assembly was ascertained our French confrères, and especially those gentlemen who had been entrusted with making the preparations for the second Laryngological Congress, should be heard from, because those who would otherwise vote according to their conviction would like to know the feelings, on the subject, of the laryngologists of France, who might be offended if the vote was against a second specialistic Congress.

Prof. KRISHABER having assured the members that no such idea would for a moment be entertained by the French co-workers in our common specialty, it was ascertained, by raising hands in the usual way, and by counter-proof, *that the members present, about one hundred in number, were UNANIMOUSLY of opinion that no second specialistic Laryngological Congress should be held.*

Another proposition by Prof. Schnitzler, viz., one to found an International Laryngological Association, was not further discussed, Dr. F. Semon observing that it was certainly desirable to consider such an idea very carefully before carrying it into execution.

After Prof. Krishaber had relinquished, and Prof. Schnitzler taken the chair,

Dr. PAUL KOCH, of Luxemburg, introduced the next discussion, on "Results of the mechanical treatment of laryngeal stenoses," by a paper, in which he showed himself, only very reservedly, a friend of this treatment, rejecting it entirely for acute stenoses, and admitting it *de facto* only in cases of chronic narrowing which do not endanger life.

Very different conclusions were arrived at in the second introductory paper, which was read by Dr. Th. Hering, of Warsaw. This gentleman presented most carefully prepared statistics of all the cases of mechanical dilatation on record. He attributed most of the relatively unsatisfactory results to want of patience, perseverance, and energy of either the surgeon or the patient, and conclusively showed that improvement would be brought about if, in the individual classes of cases in which mechanical dilatation is indicated, the treatment were regulated according to certain definite rules, which he had formulated from a careful study of the whole question and fully 100 cases. He vindicated for Prof. v.

Schrötter the certainly great merit of having introduced this very important and useful method of laryngo-surgery.

The character of Dr. Hering's paper was of so convincing a nature, the number of cases on which he had based his conclusions so great, and the number of individual experiences of the members present evidently so small, that most of them preferred learning to discussing, and that, therefore, the discussion of this important subject was the shortest and least productive of a statement of individual opinions that occupied the Subsection.

Dr. TORNWALDT, of Dantzic, recommended his water-tampon for gradual dilatation.

Dr. GROSSMANN, of Vienna (formerly Prof. v. Schroetter's assistant), eulogized his former teacher's successful endeavors, recommended, as did also Dr. Hering, not to neglect other treatment while carrying out the mechanical, and said that he considered "tubage" indicated only if one wished to gain time for tracheotomy; otherwise it was a *noli me tangere*.

Dr. MAX SCHÄFFER, of Bremen, corroborated Dr. Hering's statements by a report of five recent successful cases of his own, which had not previously been published.

Neither Dr. Koch nor Dr. Hering wished to reply, and the meeting adjourned.

### *Sixth Meeting.*

After a day of well-deserved rest, the sixth meeting of the Subsection was opened on Monday, August 8th, at 10 A. M., Dr. Solis-Cohen, of Philadelphia, in the chair.

Dr. FOULIS (of Glasgow) introduced the discussion on "Indications for the complete or partial extirpation of the larynx," by a paper, in which he gave an analysis of all the cases of complete extirpation of the larynx, 32 in number, dividing them into three groups, according to whether they had been performed for: (a) non-malignant disease, (b) sarcoma, (c) carcinoma. He stated the causes of mortality in the three groups, dwelt upon the dangers of the operation, considered the influence of age on mortality, discussed the question whether partial or total extirpation was preferable, and came, among other conclusions, to the following, viz.: (1) Total extirpation is better than partial; (2) the extirpation of the larynx for malignant disease is indicated as soon as the diagnosis is clearly made; (3) very old people, *i. e.*, over 70, should not be operated on; (4) papillomata which after fair and clean

removal recur, give an indication for excision of the larynx on account of their known malignant tendency in many cases.

Dr. PH. SCHECH's (of Munich) introductory paper, which was, in his unavoidable absence, read for him by Dr. Felix Semon, considered most systematically all possible indications and contra-indications for both total and partial excision, and came to in part similar, in part very different conclusions than those of Dr. Foulis. Dr. Schech does not entirely condemn partial excision, and protests against excision, either total or partial, in cases of papillomata, even if they occur repeatedly.

The subsequent discussion, one of the most interesting and animated, in which not less than ten speakers took part, gave evidence of the great difference of opinion as to the indications of the operation known to exist at present between surgeons and laryngologists.

Dr. SOLIS-COHEN wished that the important difference between recovery and mere "survival after the operation" would be more seriously considered, and referred to the usually miserable condition of the patient after the operation.

Prof. CASELLI, of Reggio-Emilia (Italy), whose remarks were read for him by Dr. Foulis, supported Dr. Foulis' thesis, that total was better than partial excision, and narrated two extirpations which he had performed since showing his first successful case last year to the laryngologists assembled at Milan. Both these cases had, however, ended fatally within a short time after the operation, one from exhaustion, the other from acute œdema of the lungs.

Dr. MORELL MACKENZIE declared himself against one of the indications for excision proposed by Dr. Foulis, viz., the recurrence of papilloma after fair and clean removal; he also referred to the often miserable condition of the patient after extirpation, and was inclined to agree with Schech, that in many cases resection could be performed and extirpation avoided.

Prof. CZERNY, of Heidelberg, whose presence was heartily welcomed by the partisans of both opinions, said he had come to learn, not to teach. But he begged to assure those who asked, "what would you like to have done to yourself if you were in the position of your patient?" that this question presented itself quite as much to the minds of those who performed the operation as to those who were opposed to it. He considered the subject scarcely sufficiently settled to enable any one to speak positively. He agreed, how-

ever, with Dr. Foulis, that in the present state of our knowledge and experience excision ought to be performed as soon as the diagnosis of carcinoma was secured. The operation as such was not very difficult ; the after-treatment, however, which was of the highest importance, the more. The individual state of the patient after the operation varied very much. His last patient, upon whom he had operated three months ago, was in a most satisfactory condition. The question whether the epiglottis was to be preserved if possible, or whether this was not necessary for functional purposes, was still an open one.

Dr. FELIX SEMON said he fully felt the difficulty of speaking immediately after the man who had first demonstrated the possibility of excising the larynx without killing the individual ; but he really thought that in this question two very different notions were in danger of being completely confounded with each other, viz.: the notions of the "possibility" of an operation and of its "justifiability." He confessed that he failed to understand how, after the experience hitherto had, the rule could be simply laid down to excise the larynx as soon as the diagnosis of carcinoma had been secured. Were the results hitherto accomplished of so encouraging a nature ? Of the 21 patients with carcinoma operated on before the month of April of this year, according to Dr. Foulis' own tables, just laid before the meeting, it was known that (with the exception of one, what had become of whom after the seventh month no one seemed to know) not a single one was alive now ; 13 having died—one might fairly say—in consequence of the operation, in a few days or weeks after its performance ; of the remaining 8 not a single one having been known to live longer than nine months after, while the greater part of them had died from recurrence of the disease in from four to six months. And what had been the kind of existence which most of them had, led in the short time of their survival of the operation ? Now it might be said that one ought not to judge from the cases hitherto recorded, because most of them had been operated on much too late, but he would ask, who would take it upon himself to decide, whether the disease was still in an "early" state, *i. e.*, whether already an infection of the neighboring parts had taken place or not ? The differential diagnosis in syphilitic disease was very often by no means as easy as generally represented in the text-books ; even the iodide of potash test, which was always referred to, ought only to be re-

lied upon very guardedly, inasmuch as he had certainly observed in quite a number of cases of œsophageal and laryngeal carcinoma, a decided temporary subjective improvement and apparently even an objective temporary arrest of the progress of the disease (averaging from 8 days to four weeks) under the administration of iodide of potassium. He narrated an interesting case in which although the glands appeared quite free when the question of extirpation came up, and he called Sir James Paget in consultation, a recurrence in the lymphatic glands of the neck would have taken place one week later, if the operation (which was fortunately abandoned) had been performed there and then. Dr. Semon wished to say expressly that he had no theoretical objections against the operation itself, agreeing as he did in many points with Schech's indications, but he would protest against excising the larynx in all cases of carcinoma as soon as the diagnosis was secured, and he protested still more strongly against extirpating the larynx for recurrent papillomata, for which the operation ought never to be performed.

Prof. BUROW, of Königsberg, stated, that if simple tracheotomy was performed, the patients lived, on an average, two and a half years after the beginning of the disease, and one and a half years after the performance of tracheotomy. He thought we were in a difficult position ; if excision was to be performed at all, we ought to operate as early as possible ; but then we would have of course to inform the patients of the dreadful nature of their malady, and thus make them miserable for the rest of their life. Early tracheotomy seemed to be the best that can at present be recommended. He wished, however, to say, that possibly his opinions on this question might change as his experience grew larger.

Dr. PROSSER JAMES, of London, spoke against excising the larynx in cases of recurrent benign growths. Recurrence could be met by repetition of removal. As to malignant disease he could only say that the patients in his own practice to whom he had proposed the operation, had either declined or postponed it, until it was too late to be performed.

Prof. LEFFERTS, of New York, and Dr. JOHNSON, of Chicago, rectified some remarks which had been made in the early part of the discussion, concerning the moral state of the patient who had been operated upon in America.

Dr. FOULIS, in closing the discussion, said he would advise extirpation for recurrent papillomata, only if evidence showed

that sarcomatous elements complicated the papillomatous disease. The distinction Dr. Semon had made between the possibility and justifiability of an operation was of course well founded, but similar considerations presented themselves in many other operations. He always laid the case before the patient and let him decide. The American case, which had so often been mentioned, did not seem to him a proper one to form conclusions from, in view of the great age of the patient and the advanced stage of the disease.

Dr. SOLIS-COHEN left the chair, which was taken by Dr. MEYER, of Copenhagen.

Prof. VOLTOLINI, of Breslau, the veteran champion of galvano-cautery, then opened the discussion on the "Galvano-caustic method in nose, pharynx, and larynx." He dwelt in his introductory paper on the fact, that the greater part of the opposition to the method was due to insufficient knowledge of its technics, and to the use of insufficient batteries and instruments. He considered that on the whole it could not be replaced by any thing else, though admitting that in suitable cases other methods might be made use of as well.

Dr. SOLIS-COHEN, of Philadelphia, who read the second introductory paper, expressed himself much more guardedly. According to him the galvano-cautery is often used unnecessarily. Similarly, as Schech had done in his paper regarding the indications for extirpation, Dr. Cohen mentioned almost all the diseases of the parts in question, in which the galvano-cautery has been made use of, and came to very distinct conclusions. We may mention especially the following, viz. : (1) the galvano-caustic method of operation is often inferior to the cold wire in the treatment of intranasal neoplasms ; (2) it is unnecessary in the treatment of adenoid vegetations at the vault of the pharynx ; (3) it is most satisfactory in cases of naso-pharyngeal growth and chronic folliculous pharyngitis ; (4) it is inadequate in satisfactorily treating pharyngeal stenosis ; (5) it is useful in certain cases of laryngeal disease (web-like cicatrices between adjacent structures, small laryngeal neoplasms, etc.). His other important conclusions must be referred to in the original.

The general result of the very spirited discussion that followed might fairly be thus summed up : There was an almost unanimous agreement as to the utility of the galvano-caustic method in certain diseases of the nose and pharynx, but less so as to its use in

the larynx, in regard to which we may truly say with Dr. Solis-Cohen that it behooves the manipulator to be sure of his hand, his instrument, and his patient !

Prof. CADIER, of Paris, read a contribution, in which he detailed his encouraging experiences with this method in preventing the recurrence of the papillary vegetations of tertiary syphilis of the larynx, in chronic enlargements of the tonsils, in chronic pharyngitis, and in many cases of nasal polypi.

Mr. LENNOX BROWNE read a paper in which he praised its use in diseases of the nose and pharynx, but was opposed to it for destroying enlarged tonsils, and in intralaryngeal disease.

Dr. FOULIS, of Glasgow, submitted a contribution recommending his method of actual cautery in certain forms of pharyngeal disease, considering it for reasons of simplicity and inexpensiveness superior to the galvano-cautery. He gave an analysis of over 200 cases in which it had been used.

The contribution of Dr. Victor Lange (of Kopenhagen) was distributed printed among the members, the author not being present.

Dr. LOEWENBERG, of Paris, who opened the discussion proper, said that he attributed a great deal of the efficiency of the galvano-cautery to the antiseptic influences of heat ; he also praised its styptic qualities, and considered it *the* method in the nose (describing at the same time a very ingenious laterally-acting nasal galvano-cautery), and, in opposition to Dr. Solis-Cohen, as almost indispensable for removing lateral adenoid growths in the pharynx.

Dr. THUDICHUM, of London, explained, in a very graphic manner, his method of dealing with all the forms of soft and hard excrescences, which often occur combined in one and the same nostril, and described the different forms of instruments which he makes use of, and which in many important respects greatly differ from those in general use. (It is much to be regretted that Dr. Thudichum, whose remarks evidently elicited a very general interest, neither left an epitome of them with the Secretaries, nor demonstrated, as was the general wish, his instruments on the following afternoon.)

The time for adjournment now being at hand, further discussion of the subject under consideration was postponed to the afternoon.

*Seventh meeting of the Subsection, Monday, Aug. 8th, at 2 p.m.,*

Dr. GEORGE JOHNSON in the chair.

Dr. BOSWORTH, of New York, read an interesting paper on the "Pathology of nasal catarrh." He detailed the results of his microscopical investigations, and came to the conclusion, that the atrophic catarrh is by no means, of necessity, an advanced stage of the hypertrophic form, but occurs separately, the pathological changes in the hypertrophic form being brought about by changes in the cavernous structure and in the muciparous glands, while in atrophic catarrh the main change consists in the partial destruction of the gland structures. The paper was illustrated by very beautiful microscopic preparations.

Dr. KRAUSE, of Berlin, wished to draw attention (in view of remarks which he would make in the discussion on "Ozæna") to the fatty detritus found in Dr. Bosworth's specimens.

No one else wishing to speak, the papers of Dr. Justi, of Idstein am Taunus, "On local treatment of whooping-cough"; of Professor Lewin, of Berlin, "On syphilis of the larynx," and of Dr. Guinier, of Cauterets, "On the rôle of the free portion of the epiglottis, and of the glosso-epiglottic folds," in the absence of the authors, were taken as read, and the adjourned discussion on the galvano-caustic method was resumed.

Dr. BOSWORTH described his methods of operation in different diseases of the nose and pharynx, and maintained that several statements of Dr. Thudichum, which the latter thought to be quite new, were contained in Dr. Bosworth's recent work. He had also used for a long time the transfixing needle as described by Dr. Thudichum.

Dr. RUFUS B. LINCOLN, of New York, wished to draw attention to one operation in particular, in which the galvano-cautery was invaluable, viz., the removal of naso-pharyngeal polypi; it was particularly necessary to cauterize the stump repeatedly after the removal of the polypus proper.

Dr. MEYER, of Copenhagen, spoke of the utility of the thermo-cautery in destroying granulations on the posterior wall of the pharynx, and referred a death which, according to Prof. Voltolini, had occurred in consequence of scraping away adenoid vegetations with the finger-nail, to other causes.

Prof. VOLTOLINI having briefly summed up the discussion, the meeting terminated.

*Eighth and last meeting of the Subsection, Tuesday, Aug. 9th,  
at 10 a.m.,*

Dr. GEORGE JOHNSON in the chair.

Dr. W. MEYER, of Kopenhagen, whose name will forever remain connected with the "Adenoid vegetations in the vault of the pharynx," inasmuch as he has been the first to direct general attention toward the frequent occurrence and great practical importance of this comparatively little-known affection, read the first introductory paper on this subject. He stated that adenoid vegetations in the vault of the pharynx had been found to occur so far in every country in which they had been looked for, but that a cold and damp climate very likely favored their development, and mentioned, as other etiological factors, youth, family tendency, cleft palate, etc. The symptoms to which they give rise did not depend exclusively upon the impeded passage of air. He stated that their importance in a given case rather depended upon their situation than upon their quantity, and touched upon the necessity of their removal in certain ear diseases, and upon the prognostic importance of their presence in some of the acute exanthemata. For diagnosis, anterior and posterior rhinoscopy and digital exploration should, if possible, be used combined in every instance. Their removal was certain and free from danger. The difficulties of the operation depended sometimes upon the hidden position and tough consistence of the vegetations. Methods of operation in which neither the finger nor the eye guide the cutting instrument, ought not be made use of; and the after-treatment ought to be very carefully carried out, considering the extraordinary tendency of these growths to recur.

Dr. LOEWENBERG, of Paris, read the second introductory paper. He treated the subject mainly from the clinical point of view. He dwelt upon the local and more remote symptoms (*e. g.*, the peculiar deformity of the thorax), and considered it indispensable to remove at least so much of the tumors as to reëstablish the permeability of the nasal fossæ and Eustachian tubes. Different methods might be made use of, but the vegetations situated on the lateral walls of the pharynx, and especially those in the vicinity of the orifice of the Eustachian tube, were best destroyed by means of a fine galvano-cautery guided by the rhinoscopic mirror.

Dr. GUYE, of Amsterdam, read a contribution, in which he rec-

commended the use of a very simple *contra-respirator*, to produce mechanical occlusion of the mouth during sleep. As to the adenoid growths he preferred scraping them away by the finger-nail to all other methods of operating.

Dr. E. WOAKES, of London, stated in his contribution his reasons for regarding these growths as papillary in their origin, the adenoid features being due to their situation, and exhibited microscopical sections illustrating these points. He then methodically dwelt upon their etiology (heredity, exanthemata, congenital affection), symptoms, diagnosis, differential diagnosis, and treatment. Dr. Woakes prefers a modification of Loewenberg's cutting forceps for the operation, and as a rule his patients are brought under the influence of an anæsthetic. In conclusion he discussed the tendency to spontaneous cure after a certain age and the consequences of leaving patients to the chance of this issue.

Dr. MICHEL, of Cologne, denied recurrences. Having for a long time paid attention to this affection, he had, in a large practice, never seen a recurrence proper; what had been so-called he would rather attribute to the continued growing of portions of the vegetations not sufficiently removed. The use of the *contra-respirator* he considered indicated only after thorough removal of the whole of the tumors; he believes, that in order to obtain a real cure, every thing that can be must be removed.

Dr. E. FRÄNKEL, of Hamburg, agrees with Dr. Meyer as to the influences of a damp and cold climate. A large part of all cases was congenital. He further discussed the unfavorable influence of the presence of these growths in cases of diphtheria, and declared himself against the exclusive use of the galvano-caustic method for their removal. He had observed after such operations tonic spasms of the sterno-cleido-mastoid muscle, of longer and shorter duration.

Dr. BÖCKER, of Berlin, would particularly draw attention to the fact that the enlargement of the adenoid tissue in the vault of the pharynx in small children, is not a consequence but rather the cause of the frequently concomitant chronic naso-pharyngeal catarrh, and that in such cases particular attention ought to be paid to this tissue in order to obtain a cure of the secondary trouble. He had operated on infants three months old by means of the finger-nail.

Dr. HOPMANN, of Cologne, had had a large experience in these cases since 1873, and proposed the name of "adenoid tumors in

the vault of the pharynx," for these growths. He generally availed himself now of the cold wire-ecraseur, and operated from the pharynx through the mouth. Occasionally, however, he used the galvano-caustic loop. Many practical hints as to the manner of dealing with individual cases, completed Dr. Hopmann's remarks.

Dr. MEYER replied, urging the diffusion of the knowledge of so serious a malady and of the means of contending with it.

Dr. LOEWENBERG, in his concluding reply, dwelt especially on the prophylactic treatment.

After the termination of this discussion, all members were requested to present copies of their published works, papers, etc., to the Library of the American Laryngological Association.

Dr. B. FRÄNKEL, of Berlin, then read the first introductory paper on the subject of the "Nature and treatment of ozæna." He contended that the name "Ozæna" should be reserved for that form which occurs without disease of the bones and cartilages, and without ulcerations of the mucous membrane. It comes under the head of chronic catarrh of the nasal cavity, and is always connected with more or less extensive atrophy of the mucous membrane. It is not, *per se*, a proof of the presence of a constitutional disease. The methods of treatment most recommended were: syringing or douching the nostrils, the use of Gottstein's tampon, and the cautious use of white heat.

Dr. E. FOURNIÉ, of Paris, read the second introductory paper. He strictly distinguished between accidental and constitutional ozæna. The former was due especially to syphilitic, diphtheritic, or catarrhal inflammation. The constitutional form was much more difficult to treat. The cause of the specific factor was, according to the author, to be found in a specific property of the glands of the naso-pharyngeal mucous membrane. Analogous specific properties of glandular secretions were found in other parts of the body. In 92 cases examined by the author there had been complete absence of deep ulcerations. Dr. Fournié then distinguished between a rarer dry, and a more frequent humid form of ozæna, and recommended in conclusion a very energetic constitutional and local treatment, in which, according to the form of ozæna present, sulphur- or alkaline arsenic-baths, cod liver oil, iodides of potassium and of iron, or arsenic and bicarbonate of soda, mechanical removal of the crusts, immediately followed by cauterization with a strong solution of nitrate of silver (1 to 5),

etc., etc., play a rôle. Even this treatment, however, gave no guarantee against frequent recurrence of the affection.

As if the laryngologists had wished to demonstrate that their zeal had not been diminished by the arduous work and the many entertainments and distractions of the past week, the discussion now entered upon, which was the last, was not only one of the most interesting, but certainly the most lively of all, not less than twelve speakers taking part in it. It may fairly be recorded that the practical result arrived at was that the affection is not curable in the strict sense of the word, at the present time, and that Gottstein's tampon and syringing after Michel's plan are the two best palliatives.

Mr. SPENCER WATSON, of London, read an elaborate contribution, in which he agreed in many respects, as to the causes and symptoms, with the arguments of the previous speakers, and recommended a course of treatment similar to that advocated by Dr. Fournié.

Dr. KRAUSE, of Berlin, showed some very instructive microscopical sections of two cases of pure ozæna, which he had had the opportunity of examining *post mortem*. The presence of a very large quantity of fatty detritus and of very numerous fat globules which he had constantly found in the atrophic mucous membrane, was the basis for his theory, that the specific fœtor of ozæna is due to the decomposition of fat and the production of fatty acids. This certainly ingenious theory found scarcely any supporters, however; on the contrary, it was rather severely criticised by most of the speakers.

Dr. E. FRÄNKEL, of Hamburg, at once protested against such an explanation. He had examined cases in which no fat had been present, and yet the fœtor had been unmistakable. Dr. Krause's comparison of ozæna with xerosis of the conjunctiva did not prove any thing, for the simple reason that the crusts in xerosis did not stink. In conclusion, Dr. Fränkel advocated that the name "Ozæna" should be wholly given up.

Dr. KENDAL FRANKS, of Dublin, thought with Zaufal, that a cause of ozæna might often be found in a defective development of the turbinated bones, and related some cases in point.

Dr. HOPMANN, of Cologne, supported the views of the last speaker, and recommended Gottstein's tampon as the best palliative.

Dr. BAYER, of Brussels, regarded the atrophic change of the

mucous membrane as always secondary to an initial hypertrophic change. Narrowness of the nostril did certainly not predispose to ozæna, the narrow nostril sometimes remaining free in a patient with unequally wide nostrils, whilst the wide one was the seat of ozæna. Carbolic acid was not to be recommended for injection, because it often destroyed the sense of smell entirely, in cases in which this sense had been preserved; and, in conclusion, Dr. Bayer warned against the use of the galvano-cautery in these cases.

Dr. MICHEL, of Cologne, did not consider Dr. Krause's histological investigations convincing, because they had been made on patients of advanced age, in whom the retrogressive stage of the disease had already been developed. He considered ozæna always as a constitutional affection, and adhered to his view that it originated in the adjacent cavities of the nose (antrum Highmori, sphenoidal and frontal sinuses, etc.). He did not consider the disease, strictly speaking, a curable one, but was quite as well satisfied with his method of methodically syringing the nose, as others were with the tampon.

Dr. GOTTSTEIN, of Breslau, was dissatisfied with the explanation of both Dr. B. Fränkel and Dr. Krause. He recommended his tampon, which had the advantage of preventing the formation of crusts. He could not agree with Dr. Michel's theory of the origin of ozæna in the adjacent cavities of the nose.

Prof. JURASZ, of Heidelberg, did not believe that atrophic rhinitis was of necessity a later stage of the hypertrophic form, but thought that it occurred sometimes as an idiopathic primary disease. He also thought that the incurability of the affection was not so absolute as represented by most of the speakers. He had himself observed two cases in which several months after conclusion of the treatment no recurrence had taken place.

Dr. LOEWENBERG, of Paris, thought that Dr. Krause's fatty detritus consisted in reality of micrococci. Moreover, in chronic otorrhœa, in which the detritus certainly contained fat, and even crystals of margaric acid, there was no smell. He considered the efficiency of Gottstein's tampon due to its antiseptic qualities.

Dr. B. FRÄNKEL, in summing up, stated his belief that the wideness of the nostril was the consequence, not the cause, of the pathological process. The retention of the secretions alone did not suffice to produce ozæna; whether a specific ferment was necessary for that purpose, he would not decide. The specific fœtor

could not be explained by a specificity of the nasal cavity, for not all nasal crusts smelled specifically ; on the other hand, the same smell was sometimes found in diseases of the trachea without participation of the nose. Fat was a regular product of disintegration of albuminoid bodies. A "cured" case of ozæna was not known to him.

Dr. FOURNIÉ not wishing to reply,

The Chairman declared the Subsection for Diseases of the Throat ready for adjournment *sine die*. He expressed his gratification at the undoubted great scientific success of this department.

Dr. SOLIS-COHEN proposed and Dr. MEYER seconded a vote of thanks to the Chairman, which was carried by acclamation.

The Chairman replied, thanking the members of the Subsection for their support, and his Secretaries for their efforts.

Dr. B. FRÄNKEL proposed and Dr. FOURNIÉ seconded a vote of thanks to the Secretaries, which was carried by acclamation.

The Secretaries returned thanks, and the proceedings of the Subsection terminated.

On the same afternoon, at 2 P. M., the supplementary demonstrations took place at the Hospital for Diseases of the Throat and Chest.

Dr. FELIX SEMON demonstrated the larynx, thyroid gland, and œsophagus of a female patient who had suffered from œsophageal carcinoma, and who had died during the operation of tracheotomy from retrotracheal hemorrhage caused by the entry of the tube, which had passed straight through the trachea and again out of it, through a large perforation in the posterior wall, into an abscess cavity situated between œsophagus, larynx, and the right wing of the greatly enlarged thyroid body, and had injured there some comparatively large thin-walled veins which lay almost unprotected in the walls of the abscess cavity.<sup>1</sup>

Dr. GOODWILLIE, of New York, demonstrated the use of the "surgical engine" for the removal of nasal exostoses.

Prof. VOLTOLINI showed his ingenious new battery, which can be used at a moment's notice for constant and faradic currents and for galvano-caustic operations, and further demonstrated his

<sup>1</sup> The case, which offered complications which are believed to be unprecedented, will be shortly published.—F. S.

galvano-caustic instruments, and showed a method of removing needles, etc., from the larynx by fixing them from without by means of a very powerful magnet, and then introducing a knitting-needle into the larynx, to which they attach themselves.

Prof. CASELLI showed a very ingenious galvano-caustic tracheotome and a new artificial larynx.

Dr. BÖCKER exhibited an improved gas-lamp, the illuminating power of which was really astonishing, and showed a modified tonsillotome.

Dr. MEYER's instruments for removing adenoid vegetations from the vault of the pharynx, and Dr. LOEWENBERG's laterally-acting nasal galvano-cautery, brought the demonstrations to an end.

TRANSACTIONS  
OF THE  
THIRD ANNUAL MEETING  
OF THE  
AMERICAN LARYNGOLOGICAL ASSOCIATION,  
HELD IN THE HALL OF THE COLLEGE OF PHYSICIANS, PHILADELPHIA,  
MAY 9, 10, AND 11, 1881.

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*First day, morning session.*

*Discussion on Dr. Smith's Paper.\**

Dr. JOHNSON said that the subject presented was a very wide one, and every Fellow of the Association could contribute cases in illustration. The fact that the throat could be the seat of reflected irritation from uterine disorder, had long been familiar. He had lately had two cases under his care : one of vaginismus, and the other of stricture of the cervix, causing dysmenorrhœa ; both complaining of long-standing throat trouble ; and in both the symptoms of laryngeal disorder disappeared after proper attention had been paid to the seat of the remote trouble. In one case, that of a professional singer, it was noticed that her voice was always better, her general health improved, and her sexual feelings stronger, directly after the menstrual period. After a few days again it was found that her health was less vigorous, and her voice failed so that she could not sing as high as before. After proper treatment by a gynæcologist, her health was completely restored. In like manner, the case of vaginismus was relieved of an explosive cough by treatment directed to the original disorder, and all the symptoms disappeared. This connection between uterine disease and laryngeal disorder, had often attracted his attention, and he had observed that patients go out of his hands into the care of the gynæcologist, and after leaving the gynæcologist

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\* See page 293.

they often return for laryngeal treatment. This shows the intimate connection between the nervous supply of the throat and the female sexual organs as a physiological, if not an anatomical, fact.

Dr. HARRISON ALLEN said that he had been especially interested by the statement of the lecturer regarding the frequent unilateral character of laryngeal neurotic affections. He had very often noticed the coincidence of disease in the lung, larynx, and nasal chambers of the same side.

He alluded to a case which he had reported last year as bearing upon the causation of the class of affections referred to. A lady, who had suffered from complete aphonia in girlhood, from which she had apparently recovered under general treatment, came into his hands years afterward, suffering with a return of the aphonia, which he ascertained was accompanied by paresis of the left vocal cord. It was associated with decided narrowing of the left nasal passage; there was also very decided tinnitus in the left ear. The aphonia was partially relieved by treatment, but the paresis of the vocal cord continued, and the tinnitus also persisted, being probably due to some change in the mucous membrane about the articulation of the ossicles.

There is no direct nervous connection between these various parts to account for this association of organs in common disorder. It should be borne in mind that the body is developed in lateral parts; the two sides being symmetrical in corresponding organs and tissues. The moment that this fact is recognized, and the relation of organs upon the same side of the body acknowledged, he believed the association of diseases of the ear and larynx would be better understood, and those cases explained where laryngitis is so likely to be accompanied by pain in the ear of the same side. The more we study the distribution of nerves, after the plan of Hilton in his work on "Rest and Pain," the more light will be thrown upon the obscure troubles connected with the question of nervous distribution, with which we all are so much interested.

In conclusion, he called attention to ovarian disease as a cause of reflex irritation and as a source of laryngeal neurotic affections. Some admirable illustrations of this class of cases occur in Dr. Elsberg's paper on the "Curiosities of Cough."

Dr. ASCH said that his experience in these cases was limited to two; in each there was violent explosive cough supposed to be

due to laryngeal trouble. Upon examination, the larynx was found in each case to be normal. Both were found to be suffering with serious uterine disorder, and in both, the laryngeal cough disappeared when the uterine trouble was properly treated.

Dr. GLASGOW said that all would agree with Dr. Smith, that these nervous disorders of the larynx are very common. Two classes are observed: (1) the purely idiopathic; (2) the neuralgic, caused by some irritant, near or remote. The source of irritation which he had commonly observed was a very small patch of inflamed tissue or an ulcerated gland, which is so small as to generally escape detection unless carefully sought for. This may exist in the tonsil or pharynx. He referred to a case of a gentleman who complained of most excessive pain over the larynx, which radiated upward, extending to the nose, and generally came on in the evening. His suffering was so great as to keep him awake, and to prevent his rest. It was accompanied by tremor, and dizziness in the head. He had been treated by several physicians and taken a great deal of medicine without relief. Upon careful examination of the throat there was nothing found to account for the trouble; but in the nose, a condition of the mucous membrane was discovered similar to that which so often accompanies idiopathic neuralgia, hyperæmia and puffiness of the mucous membrane, but no inflammation; and in the naso-pharyngeal space posteriorly, the whole surface appeared as if sown with red inflamed patches. He had never seen a case of this kind before, and considered it, at first, as one of herpes, but could find no vesicles; it resembled granular sore throat. The interesting point about the case was the fact that the whole pain and nervous disorder disappeared after using an injection of a weak solution of carbolic acid and morphine in the naso-pharynx. After using the wash, the patient slept at night for the first time in seven weeks. There was a gradual subsiding of the pain as the swelling in the nose yielded to treatment, but the injections subsequently lost their effect, and the patient was only restored after a change of climate. The disease was plainly a neurotic affection of the throat, due to reflex irritation from the posterior nasal and pharyngeal affection.

Dr. J. O. ROE said that there was one class of nervous affections which had not been spoken of, where the difficulty seems limited to the arytenoid cartilage, associated with a dry feeling of the mucous membrane of the larynx and neuralgic pain around

the throat. The cause is probably a debilitated condition of the system; the symptoms are relieved by putting the patient upon constitutional treatment (quinine is most efficacious), and making mild applications to the parts. He had seen most annoying and persistent cough associated with neuralgic pain, and without a careful examination of the arytenoid cartilages and this particular region of the larynx, nothing abnormal would have been detected.

Dr. LEFFERTS alluded to two curiosities in connection with this class of disorder; these cases he would not attempt to explain, but would leave the nut for the neurologists to crack. The patients were both ladies with absolute aphonia, in whom it was discovered that, by making pressure upon a particular spot in the back immediately under the angle of the scapula, the voice would at once return. They subsequently learned to take advantage of this fact, and whenever they desired to speak would sit so that the back of a chair would press upon the special region; the effect would at once follow, like pressing upon an electric bell.

Dr. SAJOUS reported a similar case from his practice, in which the patient was aphonic, but voice was restored by pressure under the left mammary gland.

Dr. DELAVAN said that the lecturer had discussed a very important question,—the neurotic origin of laryngeal trouble. There is no question but that laryngeal affections often indicate and are dependent upon a relaxed condition of the entire nervous system. In treatment, this fact is acknowledged, for patients are directed to avoid all depressing causes.

As the lecturer pointed out, there is often ulceration of the larynx and deposit in the lung upon the corresponding side, and it not infrequently happens that the pressure of consolidated lung tissue upon the recurrent laryngeal nerve produces paralysis of the vocal cord. If the effect can be so great as to cause paralysis, it is possible that a lesser degree of irritation may lead to defective innervation, inflammation, and ulceration.

The cases of Dr. Smith may be explained in this way. Possibly the whole origin of tuberculous laryngitis consecutive to disease of the lung may thus be accounted for. He believed that modern authorities upon phthisis seem more and more disposed to acknowledge its dependence upon the nervous system.

Dr. SMITH, in closing the discussion, said that he felt it was due the Association that he should offer some explanation for calling

attention to so common an affection as neuralgia of the throat, but he was led to do it by the occurrence of several cases in which the pain was not sharp, but dull and aching in character, and in which, as further examination showed, the neuralgic character was not well borne out.

In regard to the ovarian origin of irritation of the larynx, it is a well-known fact that many prominent singers are obliged to give themselves rest during their menstrual periods, on account of failure of voice at this time ; they have to make their engagements accordingly.

In conclusion, he begged the members to bear in mind the fact to which he had directed their attention, that while tickling in the larynx might not invariably indicate incipient tuberculous laryngitis, yet it should always excite suspicion, and lead to an examination of the lungs ; it is, therefore, a symptom of importance.

*Discussion of the Papers of Drs. Robinson, Porter, and Bosworth.\**

Dr. A. H. SMITH said that it is important, at the outset, to distinguish clearly the cases of catarrhal character from those of tubercular origin. Tubercular laryngitis should be preceded by deposit, thickening within the larynx, with general dyscrasia, and associated, sooner or later, with trouble in the lungs. Whether there are many cases of laryngeal disease in which the difficulty depends primarily upon a deposit of lymphoid substance, recognized as true tubercle, is a matter of considerable doubt. He could not recall a case coming under his own observation.

Of the fact that true tubercle may be deposited in the larynx, there can be no manner of doubt, but he agreed with Dr. Bosworth that it is often of a catarrhal character at the outset. Whether the disease ever makes its first appearance in the larynx before invading the lungs, is a matter of question, although it is possible that a focus of irritation might induce a preliminary deposit in the larynx in some cases.

As soon as the infiltration takes place in the larynx there is at once mechanical obstruction; the swelling of the laryngeal mucous membrane and the thickening of the inter-arytenoid fold interfere with the movements ; inflammation and ulceration result, from the rule that whenever there is irritation there is afflux of blood. The effects of the dyscrasia, and those of the local inflammation, are so

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\* See pages 300, 323, 329.

intimately bound together that it is a matter of great difficulty to separate the action of the two factors, if indeed they are capable of being separated entirely.

With reference to the prognosis, it would seem as if in the early stage something may be done in the way of treatment, but in advanced cases the prognosis is very bad. Where the lungs are already much involved the additional difficulty in the larynx makes the prognosis almost hopeless. In going through the wards with his students, in speaking of these cases, he tells them that he almost envies the veterinary surgeons who, after making careful pathological and diagnostic observations, sum up the treatment in two words : "Axe to os frontis."

Dr. GLASGOW was decidedly sceptical as to the existence of laryngeal tubercular disease, or of the deposit of true tubercle within the larynx. He had seen many cases of throat affection in phthisis, but he had seen very few, if any, in which the trouble was really due to the local deposit of tubercle. It had just been stated that some of these cases get well. How can this occur if they are tubercular? Tubercle is a dead product; it must be thrown off from the body before they can get well, and the only way in which this can occur is by ulceration.

All depends upon what is called tubercle. Some pathologists say that in the vast majority of cases of phthisis, tubercle is found in the larynx; others, equally good authorities, say it is among the rarest of events. Which shall be believed? The uncertainty arises from the fact that the same things are called by different names. What one calls tubercle, another calls a cheesy gland. He believed himself that there is very little difference between them. If any one should state, as had been done to-day, that acute miliary tubercle had been cured, we should say that the diagnosis had been at fault. The same would hold true as regards tubercle of the larynx. He believed that the vast majority of these cases belong to the sixth class of Dr. Robinson, and are inflammatory in their origin. The continued irritation results in infiltration of tissue, with hyperplasia of cells. Under the microscope, we find a great many small round cells, considered by some peculiar to tubercle, and enlarged glands. These cases we have seen recover; they have nothing to do with tubercle, but are simply inflammatory, and should not be cited as evidence of the curability of tubercle of the larynx.

Dr. SEILER said that there are certain qualities which should

be taken into consideration in speaking of tubercle. In the first place we cannot recognize tubercle by any specific characters under the microscope, but find only adenoid tissue and giant cells in addition to the ordinary structural appearances of the part. A simple collection of small round cells and inflammatory products is never called tubercle. He could not agree with the last speaker that there is no such thing as true tubercle of the larynx, for he had too often seen it himself, and it was shown in the specimens of the larynx presented by the President at the meeting in New York. Moreover, he did not think that Dr. Porter had intended to refer to acute miliary tubercle in the cases reported, but to the catarrhal phthisical inflammation of the larynx due to disease in the lungs; and the question whether or not we accept the recent views of the pathology of tubercle does not matter in these cases, as they are not tubercular in their nature. We recognize the pyriform arytenoid swelling and worm-eaten epiglottis as due to chronic inflammation; but, on the other hand, there are undoubtedly cases of true tubercle in the larynx. Why should it not occur? The larynx is lined by mucous membrane, it is the seat of constant motion with every act of respiration, and since tubercles may be deposited in all the other tissues, there is no reason why the larynx should be exempt. He also must take exception to the remark that tubercle is a foreign substance, and must be expelled by ulceration. On the contrary, it may become encysted and undergo calcareous change. *Trichinæ* are larger than tubercle, and they may remain encysted for years. Foreign bodies of considerable size may also remain in the tissues without causing ulceration. *Post-mortem* examinations of the lungs often show calcareous nodules that were originally tubercular deposit.

Dr. J. O. ROE said that the prognosis would depend upon what is called tubercular disease of the larynx. If the name is restricted to laryngeal tuberculosis in the state of ulceration, no one has seen such a case get well; he, certainly, never had; but if we consider the swelling which precedes the ulceration as coming under this title, then we have all seen such cases recover. It depends altogether upon the stage at which the treatment begins whether the case is curable or not. In the diagnosis we should interrogate the systemic conditions; if there is an elevation of temperature, a depressed state of the system, and pulmonary symptoms, the prognosis is poor; such a case of tubercular laryngitis will lead to a fatal result.

Dr. JOHNSON said that the question was one of much practical interest. It is stated by authorities that the diagnosis of laryngeal phthisis is one about which there should be no manner of doubt. This is true as regards the later stages, but in the incipency there is great difficulty in deciding the question. In his section of the country there are constantly a large number of cases of catarrhal disorder of the larynx not generally developing into phthisis. In the early stage of phthisis we sometimes find an inflammation of the larynx which it is very difficult to diagnose from a catarrhal affection.

The last speaker alluded to a point upon which he (Dr. Johnson) was accustomed to rely: whenever, in cases in which there is no other trouble to account for the increased bodily heat, he finds chronic laryngitis associated with an irregular elevation of temperature, he gives a more serious prognosis than where the temperature is normal; and where the temperature of the body is not elevated, although the larynx may present the appearance of tubercular phthisis, he is accustomed to consider the affection as catarrhal.

He could only recall one case of tubercular laryngitis coming under his observation which he could consider cured. In this case there was ulceration and loss of the posterior portion of one of the ventricular bands. The disease was arrested, and the patient was free from it for many years. Some years afterward he developed pulmonary disease, of which he died. At the time of first treatment it was presumably a case of laryngeal phthisis. It is an interesting question whether or not laryngeal tubercle is always consecutive to pulmonary disease. He knew of a case with persistent aphonia, whose lungs were examined and pronounced to be in good condition by Dr. Austin Flint, and she also consulted Dr. Elsberg, who considered it a case of catarrhal trouble, and curable. A short time afterward the speaker saw her, and, upon examination, found a well-marked condition of laryngeal phthisis, with loss of tissue; she subsequently developed cavities in the lungs, and died of consumption four months afterward, with all the signs of tuberculosis. He was unwilling to make the statement that any case could not recover, as long as the machinery of life was able to carry on its functions, and, therefore, would not declare that a case of laryngeal phthisis may not get well, just as cases of pulmonary phthisis sometimes are cured; but he did not consider the prognosis very hopeful.

Dr. KNIGHT said that the question had been so well discussed that there remained but few points undeveloped. General impressions are of very little value, and unless an accurate record of the appearances from day to day is kept, an opinion is of very little weight as regards the effects of treatment ; so that, in saying that he never had had a patient under treatment for simple catarrhal inflammation of the larynx, who afterward returned with laryngeal phthisis, he merely meant that he could not recall such a case ; it may be that they have done so, for certainly simple inflammation is no protection against subsequent tubercular disease. It seemed that catarrhal inflammation cannot, on the other hand, be regarded as a very potent factor, or cases which we have had under treatment and observation for many years would more commonly return with laryngeal phthisis.

With regard to the diagnosis of laryngeal phthisis, especial stress had been laid upon the pyriform swelling as a typical appearance, and it is so of one form ; but there is another form in which the disease occurs lower down in the larynx, where there is no apparent swelling over the arytenoid cartilages.

As regards the results to be obtained from treatment, it would seem that the generally unfavorable prognosis, when it occurs in the mouth, where it is so accessible to treatment, might point to the conclusion that in laryngeal phthisis it should be equally poor, unless we are dealing with a different pathological process ; while in the mouth it is true tubercular disease and not a catarrhal inflammation, in the larynx the reverse being the case.

Dr. SHURLY considered it of primary importance to make a correct diagnosis. There are many cases of chronic inflammation, with or without much swelling, that are sometimes very slow in their course ; there are others where the general appearance of the mucous membrane leads to the suspicion of tubercle, but which are also only catarrhal in character. Necrosis takes place sometimes with very little hypertrophy and swelling, but at other times there is a great deal of local swelling and œdema. Now to determine the exact nature of these cases is often very difficult.

As regards the prognosis, general tuberculosis, with local expression in the mouth, larynx, or anywhere else, he believed to be universally fatal ; he had never known such a case to recover. In these cases of true laryngeal phthisis, it is a matter of observation that there is also tubercular deposit in other organs of the body. It is true that tubercular deposit may take place, and no physical

signs be manifested ; in the lungs, for instance, it has been found after death, when no ear had been acute enough to detect it during life.

In Michigan he often sees cases of chronic laryngitis and thickening, due to malarial toxæmia, even going on to complete aphonia, without any deposit in the lungs, the trouble in these cases seeming to be chiefly in the liver. Although a few have been diagnosed as laryngeal phthisis, his own observation had been that they are of the character just spoken of. In his experience, in cases of true laryngeal phthisis, the prognosis is always a grave one.

Dr. ROBINSON, in closing the discussion, said that no amount of negative evidence will stand in the face of positive results. Authorities have stated that laryngeal phthisis is hopeless, but results show that it is safest to go on the ground that these cases are sometimes curable ; even if treatment fails a thousand times, it may save the thousand-and-first case.

As regards pathology, he believed that the very best microscopists are often wholly unable to determine whether a certain lesion is tubercular or not ; the only way to decide the question is by inoculation. If this is where science stands to-day, let us take the situation for what it is worth. It is, therefore, more rational to go on the ground that these cases are amenable to treatment. He agreed with all the speakers that the diagnosis is difficult to make, and, after improvement, it is often more difficult to satisfy ourselves that the diagnosis was correct.

Dr. PORTER felt gratified that the position he had taken, and in which he had expected to stand almost alone, had been so well supported by the last speaker in his paper, and in the experience of the different Fellows who had discussed the subject, as the views given in the text-books are generally adverse to his proposition that some cases of laryngeal phthisis are curable. The cases which he had reported from his own practice were such as to satisfy him that they were laryngeal phthisis. All the authors and writers agree as to the character of this disease ; and the condition of the lung also confirmed the diagnosis. These cases are now doing well. Without entering upon the discussion of the question of the curability of tuberculosis, he would merely take the position that these cases may get well, and indeed offer much encouragement. He believed that the observations were worthy of credence and attention.

Dr. BOSWORTH said that in the diagnosis, the club-shaped arytenoids and appearances of infiltration were of value in deciding the presence of tubercular laryngeal phthisis, in its early stage particularly. In treating such cases he believed that the introduction of sponges and brushes into the larynx only increases the tendency to ulceration, and hastens a fatal issue. During the last few years he had not touched the larynx with instruments, in these cases, and in the light of his early experience, he had come to the conclusion that now his patients do much better than before. In reference to pathology, he believed that catarrhal ulceration of the larynx does not exist without some antecedent constitutional cause to account for it. As to prognosis, if these cases are treated by harsh and unjustifiable means the prognosis is bad ; if the larynx is left alone, except the injection of medicated or detergent sprays, the prognosis is better. If the least irritating method of local treatment be adopted, and the patient experiences relief and comfort after the sitting, then the treatment is doing good.

Three years ago he had reported 37 cases of laryngeal phthisis, as arrested ; among them were several in which the club-shaped arytenoids were present, and in one there was ulceration of the epiglottis. He had now increased his list to sixty cases ; and out of it he had seen two or three cases of ulceration of the epiglottis recover, and seven or eight in which there was laryngeal ulceration.

Even in cases in which the progress is not arrested, and improvement does not take place, it is worthy of note that good is done to the patient by relieving the symptoms, and enabling him to eat and sleep in comparative comfort.

He never claimed more in laryngeal phthisis than this : in the early stage we can arrest the disease ; but even where ulceration has occurred, he had seen cases get well. In cases where there is well-marked elevation of temperature, he had never seen a case in which, after a while, lung symptoms did not develop and carry off the patient.

*Second day, morning session.*

*Discussion of Dr. Elsberg's Paper and Remarks on the Apparatus Shown.\**

Dr. MYNTER inquired concerning the liability to explosion.

Dr. SEILER said that he had been accustomed to the lantern for

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\* See page 335.

many years, and with ordinary care considered it perfectly safe. In the form presented by Dr. Elsberg, no explosion could take place.

Dr. COHEN had tried the Trouvé apparatus for illumination, and could not obtain as much light as from ordinary gas ; in several experiments the platinum melted before it got to a white heat.

Dr. SEILER had had the same experience.

Dr. COHEN had not succeeded with the Trouvé apparatus for galvano-caustic purposes. He inquired whether Prof. Elsberg would give up his ordinary method of illumination in favor of this new plan of Trouvé's.

Dr. ELSBERG replied he would not. He did not think that the apparatus of Trouvé would ever amount to any thing for ordinary laryngoscopic illuminating purposes, but for galvano-cautery it would be very useful. With the aid of the rheostat the amount of heat could be regulated with as much ease as the size of the flame by the ordinary stop-cock of the gas-light ; and for all the minor galvano-cautery operations it offers decided advantages.

As regards the lime light, he assured Dr. Mynter that it is perfectly safe in the form recommended ; unless a person was very careless or tried very hard, it would be difficult to have any accident.





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